BRIEF COURSE SERIES *in* EDUCATION

A BRIEF COURSE IN THE TEACHING PROCESS

Brief Course Series in Education

EDITED BY

PAUL MONROE, PH.D.

BRIEF COURSE IN THE HISTORY OF EDUCATION
PAUL MONROE, PH.D., Professor of the History of Education, Teachers College, Columbia University.

BRIEF COURSE IN THE TEACHING PROCESS
GEORGE D. STRAYER, PH.D., Professor of Educational Administration, Teachers College, Columbia University.

BRIEF COURSE IN THE PHILOSOPHY OF EDUCATION. JOHN DEWEY, PH.D., LL.D., Professor of Philosophy, Columbia University. *In preparation.*

A BRIEF COURSE

IN

THE TEACHING PROCESS

BY

GEORGE DRAYTON STRAYER, PH.D.

PROFESSOR OF EDUCATIONAL ADMINISTRATION, FORMERLY
ADJUNCT PROFESSOR OF ELEMENTARY EDUCATION
TEACHERS COLLEGE, COLUMBIA UNIVERSITY

New York
THE MACMILLAN COMPANY
1912

All rights reserved

COPYRIGHT, 1911,
BY THE MACMILLAN COMPANY.

Set up and electrotyped. Published October, 1911. Reprinted January, March, 1912.

Norwood Press
J. S. Cushing Co. — Berwick & Smith Co.
Norwood, Mass., U.S.A.

TO MY WIFE

PREFACE

This book is the direct outcome of experience in trying to help teachers grow in skill in the art of teaching and in power to appreciate the work in which they are engaged. In the following pages have been treated as concretely as possible the problems which the teacher faces day after day in the classroom. Theories of education have not been discussed at any great length, but rather those processes through which these fundamental principles find their expression in actual teaching.

Terminology which it is difficult for teachers to understand has been avoided. Although the results of studies in educational psychology and in experimental pedagogy have been included in the interpretation of the problems discussed, it has not been thought advantageous to discuss at any length any one of these investigations.

Many of the books which have been written for teachers have discussed theories of teaching method without indicating clearly the application of these principles in typical classroom exercises. In other volumes a single type of teaching has been emphasized to the exclusion of other equally valid methods of instruction. In this book each of the several typical methods of instruction has been treated, and the validity of the particular practice indicated in terms of the end to be accomplished, as well as the technique to be used. Since the technique of teaching method is not the only element in determining the efficiency of the teacher, there is included in this book a discussion of those other aspects of the teacher's work which determine the contribution which she makes to the education of the children with whom she works.

In the chapter on lesson plans are given a number of illustrations which conform to the types of exercises discussed earlier in the book. One of the greatest needs in working with teachers is met by this very definite provision for demonstrating the validity of the types of teaching discussed. The exercises given at the end of each chapter are intended to supplement the discussions of the book by calling for an interpretation of the thought there presented in terms of situations with which teachers are commonly familiar.

To Professors F. M. McMurry, Naomi Norsworthy, and L. D. Coffman, each of whom has read the manuscript, I am indebted for many valuable suggestions. To Miss Kirchwey of the Horace Mann School, Miss Steele and Miss Wright of the Speyer School, to Miss Tall, Supervisor of Grammar Grades in Baltimore County, Maryland, and to Dr. Lida B. Earhart of the New York City Schools, I am indebted for lesson plans. The outlines for the study of English, arithmetic, geography, and history which are given in the appendix are published with the permission of the authors and of the Teachers College Bureau of Publications.

GEORGE DRAYTON STRAYER.

Teachers College, Columbia University,
August 10, 1911.

TABLE OF CONTENTS

CHAPTER I

The Aim of Education

PAGES

Education measured by differences brought about in individuals — Various statements of the aim — The individualistic point of view has been emphasized — The social aim of education — Aim realized in various types of education — Various teaching processes contribute to the realization of the aim — Test of the teacher's work the *present* realization of the aim 1–11

CHAPTER II

The Factors Conditioning the Teaching Process

Success in realizing the aim of education depends upon a clear realization of the conditioning factors — The increased responsibility of the school — The necessity for knowledge of the home life of children — The instinctive equipment of children — Play — Constructiveness — Imitation — Emulation — Pugnacity — Curiosity — Ownership — The social instinct — Wonder — The importance of interest in instruction — The danger of divided interest — Interest as means and as end — Heredity — Individual differences 12–31

CHAPTER III

The Teaching Process

Teaching a process of controlling adjustments — Types of adjustment — The common element in these situations, satisfaction — Types of attention corresponding to types of adjustment — Passive, active, and secondary passive attention — Illustrations of the types of attention — The problem of securing continued attention — The importance of the problem in teaching . . . 32–40

CHAPTER IV

The Drill Lesson

PAGES

The necessity for drill — The question of motive — Clear ideas of the habit to be formed essential — Repetition with attention essential in drill work — Attention held by initial motive, by varying the procedure, by placing time limits, and by appealing to emulation — Necessity for accuracy in practice — The periods elapsing between repetitions or series of repetitions should be gradually lengthened — Danger of the cramming method — In a series of responses to be made automatic each member of the series must be included — Drill especially on work that presents peculiar difficulty 41–50

CHAPTER V

The Inductive Lesson

The importance of thinking — Preparation should end with statement of the problem by children — The gathering of data the work of pupils in so far as is possible — Suggestions for conducting excursions — The hypothesis in relation to comparison and abstraction — Not everything can be developed — Respect for the expert to be developed — Danger of helping children too much — The steps of the process cannot be sharply differentiated — Teaching by types 51–69

CHAPTER VI

The Deductive Lesson

The complete process of thought involves both induction and deduction — The frequency of deductive thinking — The teacher in relation to the thinking of children — Reflection — The problem as essential in deductive as in inductive thinking — The search for the principle or law which explains — The meaning of inference — The importance of verification 70–77

CHAPTER VII

The Lesson for Appreciation

Education should enable one to enjoy life — Power of appreciation should be developed in our schools — Necessity for power of

PAGES

appreciation on the part of the teacher — The relation of command of technique involved in creation to power of appreciation — The necessity for a right emotional attitude on part of children at the beginning of such an exercise — Expression of feeling should not be forced — The teacher as interpreter — Creative work by children — Appreciation in fields other than those involving the æsthetic emotions 78–85

CHAPTER VIII

THE STUDY LESSON

The importance of independent work — Children must become conscious of the methods which can be most efficiently employed — Statement of problem essential for study — Assignments — Children must be taught how to collect data — Taking notes — Critical attitude developed — Reflection — The importance of the habit of verification — Teaching children to memorize by wholes — Importance of thought in memory work — Children can be taught how to form habits 86–100

CHAPTER IX

REVIEW OR EXAMINATION LESSON

An examination involves a review — A review a summary and a new view — Value of reviews — An abstract or topical outline a good review — A review by application — The only real test of the teacher's work found in children's everyday action — Examinations as a test of the success of teaching — The needs for scales of measurement 101–106

CHAPTER X

THE RECITATION LESSON

The weakness of this type of exercise as commonly conducted — The topical recitation — The value of outlines prepared by pupils — Pupils should learn how to use books — The danger of being satisfied with words — Provision for supplementing the text — Danger of accepting vague or incoherent answers — The danger in developing an ultra-individualistic attitude — The recitation

PAGES

lesson not comparable in importance to other types of exercises discussed 107–113

CHAPTER XI

QUESTIONING

The importance of good questions — Types of questions — A lack of scope a common fault in questions — Careful planning necessary — The novelty of the form in which the question is put important — The method of shock — The technique of questioning — The mistake of asking questions in a definite order, of repeating questions, of repeating answers — Questioning by pupils — Importance of writing pivotal questions to be used in the recitation 114–128

CHAPTER XII

SOCIAL PHASES OF THE RECITATION

Social aim of education realized in the classroom — Motives commonly operating in schools — Children naturally work together — Changes in school work demanded by the aim of education — Illustrations of coöperation in schools — Opportunity in manual work for group work — Plan for individual contribution in all subjects — All kinds of school exercises may lend themselves to the development of the social spirit — Need for more purposeful work for children — The social motive important in stimulating intellectual activity 129–138

CHAPTER XIII

THE PHYSICAL WELFARE OF CHILDREN

The importance of physical efficiency — The teacher should know something of the standards of lighting, heating, and ventilating — Right habits of posture under the control of teachers — The schoolroom and infectious diseases — The teacher's responsibility for discovering defects of sight, hearing, and the like — The teacher and the movement for better health conditions in the community — The teacher's right to health 139–144

CHAPTER XIV

Moral Training

PAGES

Intellectual and moral training cannot be separated — School conditions offer advantages for moral training — Increased responsibility of schools for moral training — Individual differences, due to heredity, environment, and age important in moral training — Physical condition and morality — Direct and indirect method of moral instruction — Morality and taste — Importance of calling for an exercise of the moral judgment — The reform of the wrong doer — The influence of the teacher 145–156

CHAPTER XV

Class Management

Class management as a means and as an end — Conditions under which management should result in habit — Situations which demand self-control — Pupil participation in school government — The daily program — Group instruction — Children should be individualized — Individual instruction will not make children equal in ability nor in accomplishment — Management in relation to teaching 157–166

CHAPTER XVI

Lesson Plans

Necessity for planning work — Teacher's lack of interest in work often repeated — Change in subject matter — Preparation, not inspiration, counts in teaching — Importance of good questions, illustrations and illustrative material, reference material, plans for constructive work — The elements in a good plan — Organization — Pivotal questions — Provision for summaries — Assignment 167–223

CHAPTER XVII

The Teacher in Relation to Supervision

The purpose of supervision — Criticism, its various types — When to discuss work with supervisors — School exhibits — Visiting

PAGES

within and outside of the system in which one works — Examinations and supervision — The function of teachers' meetings — Institutes, the better type — Supervision and growth . . 224–231

CHAPTER XVIII

THE TEACHER IN RELATION TO THE COURSE OF STUDY

The course of study as a taskmaster — The real purpose of the course of study — Provisions for minimum, alternative, and optional work — How the course of study may help the teacher — The teacher's contribution to the making of the course of study — The interpretation of the course of study to children — The doctrine of formal discipline — The vitalization of the curriculum . 232–246

CHAPTER XIX

MEASURING RESULTS IN EDUCATION

Efficiency demands that we evaluate our results — Progress by the method of trial and success — Reasons why scientific work in education has progressed slowly — Results already achieved in measuring the results of our practice — Education means change, and these changes are measurable — Lack of adequate units of measurement not an argument against measurement — The steps in scientific investigation — The teacher in relation to scientific work in education — The school a laboratory . . . 247–265

A BRIEF COURSE IN THE TEACHING PROCESS

CHAPTER I

THE AIM OF EDUCATION

Education is worth just the difference it makes in the activities of the individual who has been educated. The question is not how many books did we compel the child to read; how much does he know of arithmetic, geography, history, music, art, and the like: but rather what use does he make of this knowledge; how is he different from the person who does not possess this information; and, still more important, are these differences in his activity desirable from the point of view of the group in which he lives. It is important, then, that we should consider, before we discuss the function of teacher in bringing about changes in children, the ends which it is desirable to attain.

The aim of education has been variously stated. In the popular mind the aim of education is usually interpreted in terms of knowledge, or the ability to make a living. The theorists have been more apt to define the purpose of education in terms of the development of the abilities of the individual, of growth, of culture, or of morality. It might be interesting to examine each of the aims which has been advanced in some detail. It may be as significant to note the element common to all.

It is safe to assume that the advocates of each statement of aim believed that their conception was broad enough to insure success for the individual educated in accordance with the particular ideal embodied in their statement of purpose. No aim would be at all acceptable which did not take account of the society in which the individual must work. The educa-

tion in a tribal society, which consisted in learning how to protect one's self and to provide for one's physical needs, the acquaintance with tribal ceremonies and tribal lore, quite as truly as our modern education, fitted the individual to get on in life. The individualistic point of view has been constantly emphasized. It has been a case of earning a living for one's self, of getting culture for the satisfaction that it might bring, of acquiring knowledge for the sake of the advancement which was thus made possible, of moral growth for the sake of individual salvation. More recently it has been common to state the aim of education in terms of social efficiency. It is the purpose of this discussion of aim to examine this concept in order to make clear its significance.

When society reaches that stage of development in which progress is definitely sought and planned for, the stage of conscious evolution, it is not enough that the individual be educated simply so that he may attain his own selfish ends. Each individual is a part of the organic whole, and in his functioning it is the good of the whole which is of paramount importance. The aim of education must, then, be broad enough to include both the welfare of the individual and the good of society. Is there any real opposition between these ends? If we think most of all of the welfare of the whole organism, must we sacrifice the interests of the constituent parts?

No one can do the most for the group of which he is a member who has not realized in his education the development of those abilities with which he is peculiarly endowed. The nurture of those abilities upon which society places a premium, and the inhibition of non-social tendencies, means greater opportunity for the exercise of whatever strength the individual possesses, greater individual growth and development, than would otherwise be possible. It is only through participation in social life that the highest individual development is possible, and it is true that "he who loseth his life" for the good of the group "shall find it." There is, then, no opposition

between that view of education which declares that the welfare of society is of paramount importance, and that which demands individual well being. If we are successful in obtaining the former, we must have secured the latter.

If the analysis of the relation of the individual to society is correct, we are justified in claiming that any adequate statement of the aim of education must point unmistakably to the idea of the common good. Education aims so to adjust the individual to the group that the welfare of society as a whole may be advanced. This adjustment can be brought about only through participation in social activities, and thus the aim is constantly realized in the process.

In our democratic society, which makes possible free education for all of its members, there can be no question of the right of society to demand that education aim to develop men and women who work for the common good. It is necessary, then, to analyze this aim of social efficiency in terms of our society. The equality of opportunity which we profess to offer is to be thought of in terms of possible service which may be rendered.

In any community the contribution to the general welfare which may be made by any one of its members is conditioned by the interests which the individual has in the general good. The unsocial individual, the one who seldom responds to the needs of the group, is out of sympathy with social problems, and contributes little to social welfare.

But it is not enough that the individual be interested in the common welfare. Interest may lead him to do that which is harmful rather than helpful, or it may be that his interest may have no result except to give him certain pleasurable emotions. There must be added to sympathy, knowledge. Interest or sympathy in the welfare of society may furnish the propelling force, but knowledge is necessary for effective action. The world is full of men and women with the best intentions who hinder rather than advance the common good.

Since each is responsible not only for his own conduct, but also for the welfare of the whole group, it is necessary that our education provide opportunity for growth in intelligence. Our schools have always emphasized this element in education. We have often defined the aim of education in terms of the development of citizenship. Usually the chief qualification of the citizen has been interpreted to be that knowledge which would enable him to exercise the right of suffrage with intelligence. We do well, however, to remember that intelligence must be exercised in all of the activities of life. Our education must strive constantly to develop men and women who will be *rational* at all times. But we may not forget that our schools have been so much concerned with the intellectual side of education that they have tended to neglect other elements which are equally significant from the standpoint of social welfare.

There is still another element which must be added, the habit of acting on behalf of the group. We all know people who know just what is demanded in a given social situation; they profess to be interested in the welfare of the group; but they never act. When their own private interests are involved they are quick to seize the opportunity for improving their condition; but in social matters they are inactive. It is in this particular, rather than in any other, that our schools fall short. We do much to arouse the sympathy of children in the general welfare; we give them the knowledge by which their action may be guided; but we give them little opportunity to form the habit of social service. This is due to the fact that we so often think of adult social activities as the only ones that are worth while, forgetting that for the child the important thing is social activity now and in his society, that the only way to prepare for adult social effectiveness is to secure social efficiency on the part of the child.

These questions still remain: how can we, through education, produce the individual who, because of social sympathy,

knowledge, and activity, will tend to advance the welfare of all; and what kinds of education meet the demands of the aim which we have set up.

First of all, we must endeavor to produce the individual who is sound physically. Modern education recognizes the fact that a man's usefulness is conditioned by his bodily condition, and is also coming to find that physical activity is not without its effect on the mental development and life of the individual. There is, therefore, one large division of our work which we may call *physical education.*

On the side of mental development, education consists in preserving and stimulating the child's interest in the materials and processes with which he may come in contact. Intellectual training aims to develop the man or woman who is mentally alert, active in investigation, and controlled by reason. It is to this *intellectual education* that our schools have devoted the larger part of their time. The school is the agency set aside by society for transmitting culture, and the teacher must always concern herself largely with the intellectual life of children.

Our modern view of education is leading us to stress, along with physical and intellectual education, a kind of training which aims to develop the individual whose moral standards are positive rather than negative. *Moral-social education* should establish ideals of social service as well as standards of individual righteousness.

Along with physical, moral-social, and intellectual-cultural education, there is need for that type of training which will enable each individual to do some particular work with a high degree of efficiency. This type of education we commonly call vocational. It is only recently that we have come to realize that it is not enough to train an individual with respect to general intelligence and morality, but that it is also just as fundamental that our education provide the training necessary for success in the particular calling which each individual is

to enter. For the preparation of clergymen, doctors, lawyers, teachers, and engineers, whose vocations require a maximum of intellectual achievement, it is true that we have long had our vocational schools. We are coming now to appreciate the fact that equality of opportunity demands that special training be given to those who are to enter the industries. Indeed, our vocational schools must multiply until there is training offered for each and every calling before we can claim to provide that training which is essential for social efficiency.

Another problem is that of the training for leisure. In society as at present constituted, it is possible for many individuals, and it should ultimately be possible for all, to have a considerable amount of leisure time. The contribution of each individual in his special line of work, and his general interest in the whole community, will depend in a considerable degree upon the proper use of leisure time. Our education must, therefore, attempt to equip men with interests and ideals which make for the nobler enjoyments.

Keeping in mind the sympathetic, wise, active social individual, made so by the process of acquiring experience or making of adjustments, both physical and mental, we have yet to reduce our aim to the terms of schoolroom practice. What can a teacher hope to do in this hour, with this group of children to work with?

First of all the teacher can work for the formation of habits which are socially desirable and for the inhibition of those which are undesirable. "Education is for behavior, and habits are the stuff of which behavior consists."[1] The school may be a very important factor in the formation of habits in each of the fields of education mentioned above. If the school is organized on a rational social basis, it must continually present opportunities for actions which should become habitual, and the future efficiency of the learner depends upon gaining such control of much of the knowledge

[1] James, *Talks to Teachers*, p. 66.

which we teach that the response desired becomes habitual. The social virtues of promptness, regularity, helpfulness, industry, fidelity, honesty, truthfulness, cleanliness, both physical and mental, patriotism, and the like, should be made habitual in connection with the situations which demand their exercise. The physical habits acquired in childhood are of the utmost significance throughout life. Much of arithmetic, spelling, writing, geography, history, and even of literature and art, will be significant in proportion as we have reduced our knowledge to the automatic basis of habit. One cannot stop to reason everything out; life is too short. We gain time and energy for the higher activities of life in proportion as we reduce the responses which occur frequently to the basis of habits. In vocational schools one of the chief aims is the formation of habits of skill. Later we shall want to discuss in detail the methodology of habit formation.

Every teacher recognizes that one of the ends which must be achieved by the school is knowledge. We shall not here enter into the discussion of the problem of what knowledge is of most worth, since for the teacher this choice is usually made and prescribed in the course of study. One cannot, however, refrain from suggesting that much that is taught would be eliminated, if we kept constantly in mind the end for which we strive. The following criteria, proposed by Professor Frank M. McMurry, will be suggestive from the standpoint of teaching, whether the teacher determines the curriculum or not.

"We hold to the following propositions in the rejection of subject matter.[1]

"1. Whatever cannot be shown to have a plain relation to some real need of life, whether æsthetic, ethical, or utilitarian in the narrower sense, must be dropped.

"2. Whatever is not reasonably within the child's comprehension.

[1] F. M. McMurry, "Advisable Omissions from the Elementary Curriculum," *Ed. Rev.*, May, 1904.

"3. Whatever is unlikely to appeal to his interest; unless it is positively demanded for the first very weighty reason.

"4. Whatever topics and details are so isolated or irrelevant that they fail to be a part of any series or chain of ideas, and therefore fail to be necessary for the appreciation of any large point. This standard, however, not to apply to the three R's and spelling."

These criteria indicate clearly that knowledge can never be in itself an end of teaching. It is not that the child may have knowledge merely, but that he shall have knowledge which will function. This knowledge which we seek to have the child master will concern his physical life, his social relationships, his vocation; and in each field the knowledge he possesses will limit his intellectual activity.

The school must keep alive, or, in some cases, awaken those interests which are socially desirable. It is not enough that habits have been formed and knowledge acquired. Much of the usefulness of the individual after he leaves school will depend on his interests which lead him to acquire new knowledge, or to attempt some new activity. It has sometimes been asserted that the school, as at present organized, tends to kill rather than to preserve those interests which are common to little children. It is probable that the passing interests in things due to curiosity must disappear, regardless of the education which we give; but it is a poor sort of education which leaves the child without abiding interests which will help him not only in making a living, but also in enjoying his life. Here, as elsewhere in education, we may be satisfied with the result only when we get the corresponding action. That child has an interest in good literature who reads good literature. We can be sure that the boy is interested in natural phenomena when he is willing to spend his leisure time finding out more about nature's ways. The only test that we have of an abiding interest in the welfare of others is the fact that the child is now active on behalf of others. In like manner are we to

judge of our success in arousing and maintaining those other interests which are desirable.

Judgments of fact are called for constantly in acquiring knowledge and in our everyday activity; but no less important in the life of individuals are judgments of worth. Education must concern itself with the ideals, purposes, and standards which should be acquired by children. There is no field in which greater skill is demanded in teaching than in bringing children to appreciate those things which are good, true, and beautiful. Ideals, or, for those who do not agree with them, prejudices, will always be of tremendous importance. They determine the course of action a man will take. Because of their ideals men have been willing to labor incessantly for a cause which they considered just, to give up personal good in the pursuance of public duty, to lose all, if they might but retain their honor, yes, even to lose their lives because they felt that this extreme service was demanded of them. The awakening and nurturing of ideals of work (or industry), of honor, of duty, of purity, of service is the greatest contribution of the best teacher.

There is one other aim which the teacher should have constantly in mind, included possibly in the above, but which needs to be stated separately for the sake of emphasis, *i.e.* that children should be taught how to work independently. The best teacher is the one who is constantly striving to render her services unnecessary. There is nothing that the school can do which will take the place of giving the child knowledge of the most economical means to be employed in achieving desirable ends. Is it a matter of knowledge, the child should be made conscious of the methods whereby truth may be established; is it the need of establishing a new habit, or the breaking up of the old one, we should make available for the pupil the principles of habit formation so that he may apply them to his own case; in matters of right and wrong, the school should have supplied standards of reference which will help

in the difficult situation. Possibly the great weakness of many teachers in imparting this knowledge of methods of work is best illustrated by citing the well-known fact that children of high school, or even college age, are found very frequently who do not know how to read a book, or study a lesson assigned. This problem will be treated in considerable detail when we come to consider the study lesson.

Pupils at work forming habits of thought, feeling, and action; acquiring knowledge of nature and of society; forming ideals which make for social well being; and learning in all of this work to act independently, to function in the society of which they are a part: this is education, and these are the goals which we should strive to achieve every day and every hour that we teach.

For Collateral Reading

Nicholas Murray Butler, *The Meaning of Education*, Chapter I.
W. C. Bagley, *The Educative Process*, Chapter III.

Exercises.

1. How would you hope to contribute to the realization of the aim of education in the teaching of English, arithmetic, cooking, geography, or other school subjects?

2. How would you determine whether or not the children in your grade are socially efficient?

3. What are the most important subjects, or parts of subjects, which you teach? Why?

4. How would an application of the aim of education as discussed in this chapter modify the work commonly done in arithmetic? In nature study?

5. It has been claimed that education should provide for the harmonious development of all of the powers. Criticize this statement of aim.

6. Could you defend the statement that "the aim of education is to produce socially efficient men and women," and at the same time deny that the greatest individual good comes from working for the general welfare?

7. Why should education be free in a democracy?

8. Is society justified in offering special education to the deficient and the delinquent? To the especially capable? Why?

9. Is the excessive rivalry which we sometimes foster in our schools compatible with the aim of social efficiency?

10. Of the several types of education, physical, intellectual, moral-social, vocational, and education for leisure, which is most neglected?

11. How do you account for the fact that many children cease to inquire, to investigate, or even to ask questions, although they are regularly taught in our schools?

12. Why do you teach school? What do you hope to accomplish?

13. Can you name specific instances of changes brought about in children under your instruction which justify you in believing that you have fulfilled the aim of education in your teaching?

14. What justification is there for music, drawing, or literature in the curriculum?

15. State briefly the aim of education.

CHAPTER II

THE FACTORS CONDITIONING THE TEACHING PROCESS

If it is essential that the teacher approach her work with a clear view of the ends which it is desirable for her to achieve, it is quite as necessary that she be conscious of the factors which condition the teaching process. The school, with its limitations and its advantages, the community and home life of the child, and, above all else, the child himself, his instincts, impulses, and abilities must be the subject of most careful study. Much progress has been made in recent years because of a better understanding and a more sympathetic attitude toward children. Teachers are beginning to see that education has its beginning in, and that it is always conditioned by, the life of the child outside of the school building. The possibilities of the school as an institution for the education of children are just beginning to be realized.

While it is true that the school shares with the home, the church, and the community at large the education of children, no one can fail to recognize the fact that the responsibilities and the activities of the school have been very greatly augmented during the past few decades. Where other institutions have lost or have become less effective, the school has gained, or has been forced to accept new responsibilities. Changed industrial conditions and life in cities have made it impossible for the home to continue to hold the important place which it once occupied in preparing its members for efficient participation in the productive activities. Whether we like it or not, we are forced to admit that the church no longer exerts the power over the lives and conduct of men that it once did.

Along with the specialization of function which is so characteristic of our modern life, citizenship in our democracy has come to require less of that type of participation in public affairs which was once a great educative factor in our community life.

As these changes in the effectiveness of other institutions have taken place, men have looked to the schools to make good the deficiency. The schools have responded to the demand made upon them. Our curriculum no longer consists of the three R's. Cooking, sewing, gardening, and many other kinds of manual work, music, physical training, and fine art are already found in our courses of study. We are coming to recognize the need for more systematic training in morals and civics, and vocational training is being introduced.

What is the significance of these changes for teachers? Is it not true that they must teach whatever is demanded by the course of study; and is not this the only difference in the teacher's function brought about by changed conditions? The answer is, most emphatically, no. The situation which has already made necessary the change in curriculum demands also changes in method quite as revolutionary. It is more essential to-day than ever before that the school present opportunities for coöperation and for group work, a chance for pupils to work together for common ends, because there is so much less demand of this sort made upon children outside of school than was formerly the case. We ought to do more than we do to develop the independence and the self-reliance which were so characteristic of the boy and girl who lived in an environment which constantly made heavy demands upon their strength, skill, and ingenuity. The responsibility for taking the initiative, and of measuring the success of one's efforts by the results produced, is all too uncommon in the lives of our children. The school must, if it is to adequately meet its enlarged responsibility, develop those habits of thought and action which enable one to get along with his fellows. The school life of the

child must, in so far as this is possible, present such opportunities, make such demands, and judge results by standards essentially social. The child must learn in school to serve, to accept responsibility, and to produce results socially valuable. We could do much to increase the efficiency of the school if we planned more carefully to have schoolroom activities find their application in the homes of children.

School education begins not with the ignorance of children, but with their knowledge. Children come to us with a great wealth of experience. Our work as teachers is to enlarge and to interpret this experience, to give it greater meaning and significance. Can any one question, then, the necessity for acquaintance with the life of the child outside of school? And this study of the out-of-school environment must continue as long as the child is in school, if the teacher's work is to be most effective. It makes a great deal of difference when you wish to teach nature study that your children have always lived in the city, at a considerable distance from a park. The problem of teaching a great commercial center to children living on farms presents some difficulty. But it is not alone these more gross differences in the lives of children which demand our attention. There are differences in ideals, differences in social custom, in short, in ways of thinking, feeling, and acting, which one must know if one would claim any adequate knowledge of the child to be taught. Probably the best opportunity to gain this intimate knowledge of the lives of children whom we teach is to be had in the work with parents and older brothers and sisters which should be carried on in the school building when the smaller children are not present. The school which is a center of community life, a place for study, for recreation, for physical development, and for social intercourse is the school that is fulfilling its mission in the life of the people; and the teacher who works in such a school will know her children.

There is one other responsibility which we as teachers must

acknowledge which again leads us beyond the schoolroom. We should work for the welfare of our children during the time that they are not with us. No other body of men and women knows the needs of these children better than we do. Our work is conditioned by the life of the child before he comes under our influence. Our work is ofttime of no effect because of the adverse conditions outside of the school. What does it matter that we try to develop morality in children, when the forces of immorality in the streets more than counteract our influence? what does it matter that we strive earnestly to provide hygienic conditions for work during five hours of the day, when filth and disease are doing their deadly work outside of the school for nineteen hours a day? Who knows better than we that children with starved bodies cannot do great things intellectually? If we were only organized to improve these conditions, we could do much for the welfare of the community. The time is coming when it will be considered as legitimate for a body of teachers to discuss the problems of impure food supply, of relief for the poor, of means for the suppression of vice, and of better hygienic conditions for the children of our cities, as it is to discuss the problems of method or the organization of school work. What we need, if we are to be effective in the work, is better organization, more craft consciousness. We now possess potentially great power for social betterment. We are exercising this power in the school, and, as individuals, outside of the school. We will, let us hope, in time, recognize the larger social demand and perform the larger social service.

The children with whom we work come to us equipped with many native reactions or tendencies to behave. In any situation the child will react in accordance with some native tendency or habit which has grown out of the original tendency. Success in teaching depends upon a recognition of these instinctive tendencies, the development of some, the grafting of new but similar reactions on others, and the inhibition of the native reaction and substitution of another in still other

cases. The instincts which are of importance in education have been variously named; among these those of greatest significance for the work of the teacher are play, constructiveness, imitation, emulation, pugnacity, curiosity, ownership, including the collecting instinct, sympathy, wonder. We shall deal briefly with each of these in relation to the work of the teacher.

Play: Possibly the lesson which teachers need most to learn is that play has real educative value. Before the school age has been reached, the child has learned chiefly by playing. In play the child gets his first experience in those activities which are later to make possible a happy, useful life in the community. The number of possible reactions possessed by a child of six is largely determined by the opportunity he has had to play. *This* is why we value so much a life free from restraint, and in contact with nature, for little children. Contact with the trees, the rocks, the birds, the flowers, and association with other children mean possibilities of learning for the child which no amount of instruction or exercise of authority can equal. The child plays now with this object and again with that; and in consequence comes to know not only the objects, but his own power. In an imaginative way he experiences all of the adult activities about him, sowing, reaping, building, cooking, cleaning, hauling, fighting; and he is wiser and better prepared for the period of struggle, which must come later, because of these activities.

Nor should this period of play end when the child enters school. The skillful teacher makes a game of many of the exercises of the school, which might be otherwise drudgery. The desire to win is common to children six years of age, and many a hard task will become play, if the element of competition is introduced and sufficient variety in procedure is provided for. By playing, children may learn to work. To achieve the ends desired in a game may involve the overcoming of difficulties which require the most earnest effort. There

can be no better preparation for life than the playing of games where team work, self-restraint, and fairness are demanded.

We need more careful study on the part of teachers of children's games, and more planning that all may secure the benefits which come from this sort of activity. In the schoolroom, wherever it is possible, the spirit of play should pervade the work. There will be cases enough where results will depend upon the exercise of authority. Let us never forget that the reaction of play may mean just as valuable results as the reaction of necessity, and that the ideal life is the one in which all work is play.

Constructiveness: Closely connected with the play instinct is the instinct to make out of the material at one's command that which will represent some element in the play. In the beginning, gestures, sounds, and whatever objects are present suffice in the make-believe world of the child. But soon the materials are rearranged or shaped into some new form in order to represent the object desired. Materials become to the child just what he can make out of them. And it is not simply in power to construct or to represent that the child grows because of this activity. To make something, to work out in materials one's idea, means growth in definiteness and control of ideas. The one adequate test of ideas must always be some sort of expression; and, for the adult as well as for the child, construction is one of the most important forms of expression. We would gain much in all of our school work in clearness and definiteness, if we resorted oftener to construction as a test. Of course, construction is not to be limited to the making of things of three dimensions. The map, plan, or artistic representation belongs to the same group, and is developed from the same instinctive tendency.

Just one more word of caution needs to be given with regard to work of this kind. In constructive work, whether with wood or clay, or with pencil or brush, the point of departure should be the child's idea, not the model or pattern provided by an

adult. After the child has made his attempt, then let him see where he has failed by reference to the object which he has tried to represent. And we can afford to be satisfied in the beginning with a crude product, so long as it satisfies the child. As for technique, there will come a time when the desire for a better product will call for greater skill and will furnish the very best possible motive for the necessary practice.

Imitation: In both play and constructive work a most important element is the instinct to imitate. The child constantly imitates adult activities in play, and in construction he represents the objects about him. As has already been indicated, it is in this way that he clarifies his ideas, that he gains experience. In imitation, which is truly instructive, the child does not consciously plan to imitate; it is enough that the model is present. This kind of imitation is sometimes called spontaneous imitation, in contradistinction to the other type of imitation, in which the individual persistently tries to reproduce the activity of another. In the latter case he is conscious of the process; and this type is sometimes called voluntary imitation. This distinction is important for teachers in many phases of school work. There are cases where the only satisfactory response is that which accords with the model, the standard which society imposes. We do not want a child to try to spell a word without being conscious of the form commonly accepted. He will succeed in spelling because he has studied *this* word, or is able to build it up from his knowledge of its constituent parts. On the other hand, wherever creative work is to be done, wherever originality is required, the educational value of the exercise is inversely proportioned to the degree in which conscious imitation of a model has entered to produce the result. In such subjects as English composition, constructive work, science work involving observation and experiment, what we want above all else is the attempt on the part of the learner to express his own ideas; and it is only after this expression that any adequate appreciation of model or of criticism can be hoped for.

There is one other factor in connection with imitation which is of great importance in teaching; namely, that children persistently imitate what they admire. This has a double significance for the teacher. Those things which can be made less attractive will tend to be less imitated; and, conversely, that which is held up as worthy of great respect will be much imitated. If we were only wise, we would devote our attention to the leader of the group, trying to secure the appropriate or desired reaction upon his or her part, rather than devoting ourselves equally to the whole group. We can depend upon it, the crowd will follow the leader whom they admire. Our appeals often mean little to children, and the models which we set up have little effect, because, however admirable these standards may seem to us, they are beyond the power of children to comprehend or admire. Instead of giving a boy a letter of Jefferson as a model, better give him the one written by his classmate. Do not expect the girl to imitate the noblest women in history, but make your appeal on the basis of the virtue of the girl she likes.

Emulation: Much that has been said above under imitation might quite as well have been written under the head of emulation. As social beings, we tend to do what others do. Consciousness of kind compels us to lay great store upon our ability to do as others do. When in Rome the difficult thing is not to do "as Romans do," but to do otherwise. The desire to do not only as well as others, but to accomplish more, is responsible for much that is achieved in the world. If we did not have others with whom we are constantly comparing ourselves, few of us would do as well as we now do. Rivalry will always be one of the greatest means of bringing about improvement or advancement in social conditions. In school, as well as in the world at large, rivalry, if kept free from jealousy and envy, will justify its existence by the results produced. The boy or girl who is anxious to distance his fellows in school is apt to be the man of ambition and of success in later life.

Pugnacity: More prominent in boys than in girls, but present in some degree in every individual, is the instinct to fight, the desire not to be overcome either by persons or conditions which surround us. In so far as this instinct leads to physical encounter, for all except the unusually strong physically, the correction comes by way of defeat. For all, the substitution of games which involve physical prowess for fighting, and the substitution of victories of intellect for the victories of physical combat, point to the utilization of this instinct in education. It is sometimes possible to appeal to this instinct when discouragement and defeat in school tasks seem inevitable. No boy likes to be told that he has been downed by the task in long division, or that he has failed to make good in spelling or geography. The whole world hates a quitter, and normal, healthy children are no exception to the rule.

Curiosity: Children are proverbially curious about things. They want to know more, to enlarge and make more definite their experience. This desire shows itself in their actions in handling materials, in making and unmaking, in questions asked, in reasoning, in play, and in imitating others. The most striking characteristic in the mental life of children is the breadth of their interests, due to this instinct of curiosity. Most adults *think* along very narrow and restricted lines; not so with children. While it is true that they do little abstract thinking, there is scarcely an object or an action which comes within the range of their senses that is not followed by the desire to find out more.

Children have the spirit of inquiry, have many problems, in short, are mentally active to a degree most uncommon among adults. The problem of the teacher is how to keep alive this spirit of inquiry, how to insure a continuance of this mental alertness. Much of our school work has certainly tended in the opposite direction. Reciting what is written in books, without thought or question, has too often been characteristic of recitations. The appeal to authority, whether of the teacher or

of the book, instead of the appeal to experience, to observation and experiment, or to other methods of establishing truth, tends to kill rather than to strengthen the spirit of inquiry. We should place greater value upon the intelligent question than upon the parrot-like answer. Respect for the problems of children, even when they seem of little account to us, rather than ridicule or evasion, will tend to keep alive this most precious heritage. Of course it is not wise to encourage the scatter-brained boy or girl who never thinks about the same thing for two minutes in succession. One great function of the teacher is to help children to concentrate upon the main issue, to show a child that his question is irrelevant to the problem under consideration, and to guide him on the path which makes thinking pleasant and profitable.

It would be a good thing for every teacher to ask herself whether while under her direction the children whom she teaches are usually mentally alert, thinking, asking questions, or whether they concern themselves only with repeating the thoughts of others. If there be any doubt with regard to the children's natural aptitude, let her observe them when out of school and contrast the result. Mental laziness is a habit acquired in spite of our initial advantage, in spite of our desire for knowledge and the pleasure which comes from thinking. The school and the teacher must always be judged by their success in keeping children awake mentally; for it is power to learn rather than knowledge which counts in later years, and learning is most of all dependent upon the initial impulses toward inquiry.

Ownership: Very early in the life of the child the idea of personal ownership develops. There can be no doubt concerning the importance of this instinct in its effect upon the achievements of men, but we are concerned chiefly, in dealing with children, with one aspect of this tendency which is commonly known as the collecting instinct. This desire to have the most complete collection of buttons, postage stamps, pic-

tures, birds' eggs, shells, arrowheads, or whatever else it may be, may often be utilized to great advantage. Illustrative material for work in history, geography, nature study, and to some degree for other subjects can be had in this way. Such a collection will mean not only a much greater interest in the work, but also a livelier appreciation of the subject, more images upon which to base its generalizations. I have never seen a class that learned more geography in a short time than was mastered by a class who followed the American fleet around the world, collecting pictures, products, and stamps for each of the countries visited, and writing a full account of the country visited to accompany these illustrations. Another class made most interesting collections in connection with their study of colonial history. It is a mistake to suppose that ready-made collections will answer the same purpose. They may illustrate better, but the added interest and enthusiasm growing out of the exercise of the collecting instinct will be wanting.

The collecting instinct may be utilized in work which deals with ideas rather than things. Children may be just as keen in collecting ideas about a subject in which they are much interested as in making their collection of stones, or birds. The transition from the one type of collecting to the other is apparent, in collections which are interesting mainly for the ideas which they suggest.

The Social Instinct: The school has often overemphasized the individualistic point of view. Competition is a legitimate motive; but if all of school life centers around this motive, the child has lost much in the non-exercise of that peculiarly human instinct which demands coöperation and sympathy. At the foundation of our society is the idea of working together for the common good. Boys and girls who are to be most useful to their fellows, who are to do the most for society, *i.e.* those who are truly educated, must have kept alive and developed this spirit, more than altruistic, which sees in the good of society the greatest individual gain. In a later chapter this topic will

be dealt with in considerable detail; suffice it to say here that many opportunities should be found for group projects, for service on the part of each member of the group of the sort that he is particularly qualified to render.

Wonder: The instinct of wonder or awe, closely related to or possibly identified with the religious instinct, is one that our modern critically scientific attitude tends to discourage. No one who has had the experience can doubt the value of this element in mental life. To wonder at the glory of the heavens will doubtless make more difference in the lives of most men and women than the smattering of astronomy they may acquire. The man who wonders at the manifestation of the power of the forces of nature may get more real joy out of life than he who feels that he has solved all of her mysteries. We are not as a people remarkable for our reverence. It may be well urged that our schools have often been responsible for the opposite attitude. This instinct of wonder will thrive only in a sympathetic atmosphere. No teacher can directly inculcate or develop it. Only that teacher who has preserved and nurtured the instinct in her own life can hope to be effective in keeping alive the same spirit in children.

In the first chapter it was claimed that teachers should work to develop the socially sympathetic, intelligent, and active individual, and that the ends to be expected from any exercises might be classified as habits, knowledge, interests, ideals or appreciations, and methods of work. In our discussion of the native reactions of children, we have endeavored to show that the possibilities of such accomplishment are the common possession of normal children. It is for the teacher who would accomplish these ends most economically to discover the instinctive basis for the habit to be formed, the knowledge to be acquired, interest to be awakened, or appreciation to be aroused. The instinctive interests of children will furnish the most powerful motives, and will serve as a basis for the most lasting results. Even when the native reaction is undesirable, the successful

process may depend not merely upon negation, but upon a grafting upon the original tendency of one that is socially desirable; or, in other cases, the substitution of another reaction based upon some other instinctive tendency. We may not always follow where instinct seems to lead, but we can never ignore these native tendencies. Whether we blindly ignore or attempt to work against nature, or wisely utilize the instincts, the fact remains that all of our work is conditioned by the native equipment.

It has become more or less the fashion in recent years to decry the theory of those who discuss the teaching process from the standpoint of the child's native tendencies, and with due regard to his interests. The reactionary who continually harks back to the good old times is still with us. The term of ridicule most commonly used in lieu of argument is "soft pedagogy." We are told that the only way to develop men and women of strength is to begin by making sure that we make our appeal on the basis of our superior authority, or even brute strength, instead of finding the foundation for our work in the instinctive curiosity and tendency to mental activity with which children come to us. It is presumed by those who argue on the side of the importance of authority that, unless children are compelled by others to do hard tasks, they will never attempt anything that involves effort. Again, they interpret interest to mean the blind following of the child's instinctive tendencies.

In our previous discussion we endeavored to show that education concerns itself quite as much with the inhibition of undesirable tendencies as with the encouragement of those which lead to desirable activity. The process is not one of following where children lead, but rather of availing ourselves of the native tendencies in order that the ends we desire to achieve may be accomplished with the least waste of time or energy. In reality, the choice between the two positions is not whether we will have regard for childish instincts and capacities, but

rather whether we shall approach our task from the standpoint of one who has faith in an appeal to the lower motive of fear, or whether we believe that children are best prepared for later activity who work out their own problems.

The best teaching can never consist in driving pupils to tasks which they do not understand and which have little significance for them. The standard of efficiency is found in ability to present to the child a need, a purpose, or a problem which solicits his attention. It may be that we shall be but imperfectly able to accomplish this result, but, nevertheless, this must be our ideal. And it is not for reasons of sentiment that we adopt it. The learning process is explained in this way only. We make a new adjustment, reconstruct our experience only in a situation which makes such a demand upon us. When a child is compelled to do a piece of school work without realizing the significance of that which he does, there is substituted for this realization of need or problem an artificial need; namely, to avoid an unpleasant consequence.

There is another important argument which must not be overlooked. When a child works under compulsion, he usually gives just as little attention to his work as may be necessary to escape painful results. It is not uncommon for children to divide their attention most skillfully between distasteful school tasks and the out-of-school activities in which they are vitally interested. This lack of undivided attention to the work in hand results in a habit of work which cannot fail to be disastrous to the highest intellectual attainment. It is true also that children who have been subjected to such treatment come to look upon books and lessons as something of a nightmare, and are only too glad when the opportunity presents itself to leave school and go to work. The child's attitude, growing out of his school experience, is quite as important as any result which we may achieve in knowledge.

Professor Dewey's summary of the relation of interest and effort defines most adequately interest in its true significance,

and indicates the place of effort in educative process. He says: —

"Genuine interest in education is the accompaniment of the identification, through action, of the self with some object or idea, because of the necessity of that object or idea for the maintenance of self-expression. Effort, in the sense in which it may be opposed to interest, implies a separation between the self and the fact to be mastered or the task to be performed, and sets up an habitual division of activities. Externally, we have mechanical habits with no psychical end or value. Internally, we have random energy or mind-wandering, a sequence of ideas with no end at all because not brought to a focus in action. Interest, in the sense in which it is opposed to effort, means simply an excitation of the sense organ to give pleasure, resulting in strain on one side and listlessness on the other.

"But when we recognize there are certain powers within the child urgent for development, needing to be acted upon, in order to secure their own due efficiency and discipline, we have a firm basis upon which to build. Effort arises normally in the attempt to give full operation, and thus growth and completion, to these powers. Adequately to act upon these impulses involves seriousness, absorption, definiteness of purpose, and results in formation of steadiness and persistent habit in the service of worthy ends. But this effort never degenerates into drudgery, nor mere strain of dead lift, because interest abides —the self is concerned throughout." [1]

Interest, as Professor Dewey defines it, is intrinsic. The pupil does his work not because he hopes to escape some punishment or get a high mark, but because the work of itself commands his attention. The teacher must constantly choose whether she will work for interest of this type, which depends upon the recognition of the worth of the task to be performed, or resort to an interest which has no relation to the work to

[1] Dewey, *Interest in Relation to Will*, p. 12.

be done. Shall she appeal to the child through his instinctive delight in finding out, in constructive work, or other form of expression, or shall she appeal to his instinct of fear of a whipping or dislike of ridicule or nagging?

It is true that, after the teacher has done her best to appeal on the basis of the child's needs for growth and development, not all children will respond equally, and so, as in the larger society outside of school, the child will need to be kept from interfering with others, and required to do that which those who are wiser have decided that it is advantageous for him to do. But this resort to authority, an acknowledgment of lack of ability on our part or the result of unfavorable conditions, must come last; it should never be the point of departure.

There is one other distinction which it is well to keep in mind when we think of interest. Our discussion thus far has considered interest as a *means* for securing certain desirable ends. We may not forget that to secure interest which will persist in many of the types of activity found in the school should be considered as an end worthy in itself.[1] We may hope to have a boy interested in his history lesson in order that he may gain the knowledge contained in this subject. Interest is the *means* we employ to secure the desired result. On the other hand, we may hope that the boy we teach will continue to be interested in history throughout his life. In this latter case the interest which we hope to secure in history becomes an *end* for which we work. As a result of any system of education, we are justified in expecting, not only an increase in the command of facts and in a knowledge of the best method of procedure in working in subjects taught, but also in hoping for the development of lasting interests which will make for a continuance of the period of education and for greater joy in life.

Heredity in Education: An inquiry into opposing theories

[1] Thorndike, *Principles of Teaching*, Chapter V.

of heredity is not relevant to our main purpose; but we are concerned with certain facts, commonly accepted, which condition our work. No one will dispute the fact that the children assembled in any schoolroom differ in native capacity, as well as in experience. Whether genius or its lack are apt to be reproduced in the children of gifted or dull parents is not the question the teacher has to solve. For her the demand is too often that she turn out a uniform product from a group of individuals who range from the genius to the dullard or mental defective. It is well for teachers to realize that in any non-selected group the majority of individuals may be expected to be of ordinary ability, and that a few will range above this standard, and a few will fall below. The important thing to remember is that a group of normal children cannot be ranged in ability in two or three distinct groups with clearly defined boundaries, but that if any adequate test be given, we will find that they distribute themselves over a wide range, with small rather than large differences between individuals. For example: if a searching test in fundamental operations of arithmetic is given, we know that some child will probably get nearly all of the work done correctly, and, even with our care in grading, some child in the group will probably fail in more than half of the work; and that between these two extremes we will have almost every grade of ability represented, with a tendency for a considerable number to group themselves at about that point which we consider ordinary or average ability.[1] Not only is it true that individuals differ in ability of any particular sort, but it is also true that the child who has little ability in one direction may be up to the average or have more than usual ability in some other direction. In our teaching we should have a minimum standard of efficiency for all who are not mentally defective, and we should strive earnestly to have all reach this goal. If wisely selected, this minimum

[1] For statistics and further argument concerning individual difference, see Thorndike, *Educational Psychology*, Chapter VIII.

will include that which is absolutely necessary for further advancement along the line of work pursued. The majority of the class should achieve results beyond this minimum, and for the exceptionally bright child the maximum should be fixed only by the child's ability and the requirements of good health. It is useless to attempt to make all alike; it is wrong to limit the accomplishment of the gifted by the capacity of the majority; these are the lessons which the consideration of the capacities of any group of children should teach. We cannot furnish ability, but we may create an attitude of listlessness and mental laziness, if we do not give the bright child enough to do. Education demands a recognition of peculiar abilities and their nurture. We can never create genius from mediocre ability, and we may not assume that genius is irrepressible.

For Collateral Reading

E. L. Thorndike, *Principles of Teaching*, Chapters V and VI.
E. L. Thorndike, *Individuality*.
E. A. Kirkpatrick, *Fundamentals of Child Study*, Chapter IV.

Exercises.

1. What institutions contribute to the education of children?
2. Why has the responsibility of the school increased during the past century?
3. How would you justify compulsory education? Medical examination? Compulsory dental treatment?
4. Why do changed social conditions demand changed methods of instruction as well as a different curriculum?
5. Why does the teacher need to know the home life of the children in her class?
6. What is the significance of parents' and mothers' clubs, or any other organization of the teachers and the patrons of the school?
7. Why should teachers participate in the campaign against tuberculosis?
8. Give instances from your own experience of the educative value of play.

9. Why can a boy write a better composition about making a kite than on "Honesty is the best policy"?

10. What is the objection to providing children with model compositions and asking them to write on closely related themes?

11. Give examples of a proper appeal to the instinct of emulation.

12. How do you account for the fact that in some classes children seldom ask questions?

13. What value is there in a collection of birds' nests, flowers, minerals, woods, and the like, which one finds in some schoolrooms?

14. How would you hope to develop the social instinct in the pupils you teach?

15. Give the children in your class ten problems in addition, score one for each column added correctly, and compare the results. Can a teacher create ability?

16. In a city school system forty per cent of the children have been retarded one or more years during their school life. Do you think that differences in ability justify the repeating of work one or more years by so large a percentage of the children?

17. Should we try to have children develop equal ability in all of their studies, or rather encourage them to do especially well in one or two subjects?

18. Should a pupil who receives only forty per cent in his arithmetic examination be compelled to repeat the grade?

19. State the argument of those who believe that disagreeable, uninteresting work is most valuable in educating children.

20. What reasons can you give for the demand that teachers secure the interest of their pupils in school work?

21. Why is it bad intellectually for a child to divide his interest between his school work and some other activity while doing school work?

22. There is always some motive present when work is accomplished in the school. If the pupil is not interested in his work, what motives will you be apt to find in operation?

23. Does the demand that children take an interest in their work mean that we will require them to do only the sort of work which is easy for them?

24. Name three situations in school work in which you would seek to use interest as a means. Three cases in which you would consider interests as ends.

25. In which situation will a boy write the better letter: when asked to write a letter as a class exercise, or when he writes to his uncle about their plans for his summer vacation?

26. The ends which we desire to attain may be relatively near or remote. Classify the following aims presented to children according to (1) the remoteness of the end to be achieved, (2) the interest which you would expect children to take in the work for which these aims are supposed to furnish some motive. Suppose the class to be a seventh-grade group of boys.

1. Learn how to build a boat.
2. Become a writer of good English.
3. Gain in skill in the process of dovetailing.
4. Write for a catalog of sets of tools for boys.
5. Find out why England maintains the largest navy in the world.
6. Prepare a description of the building of the Panama Canal.
7. Decide why so many Russians come to the United States.
8. Make the drawings for a sled to be built for his own use.
9. Make a rabbit trap from plans furnished by the teacher.
10. Study algebra to get ready to go to college.
11. Write a story of an interclass basket-ball game for the school paper.
12. Enjoy one of Kipling's stories.

CHAPTER III

THE TEACHING PROCESS

EDUCATION means change, growth, development. The process is one of adjustment in which the individual is not only affected by his environment, but is also capable, in turn, of changing or even in a measure creating the situation in which he lives. The experience of any individual grows in meaning and significance through successive demands for new adjustments. Among the lower animal forms there are those who have very little power of adjustment; regardless of the situation presented, they can react only in one way, or, as the animal structure increases in complexity, in a very few ways. The power of adjustment being small, the possibilities of learning and of education are small. As has already been indicated in our discussion of instincts, human beings are equipped with many tendencies to react, and with power to react in a very great variety of ways. Man has power beyond all other animals to profit by experience, and is distinguished from them by his power to learn by means of ideas, not simply by the process of trial and error. Our problem is, then, to inquire concerning the conditions under which a situation demands adjustment, under which experience is reconstructed, and, further, to discuss the manner in which socially desirable reactions may be made the permanent possession of the learner, while those inimical to social welfare are eliminated.

In general adjustments are made in response to one of the following situations: (1) when satisfaction of some instinctive need results; (2) when satisfaction of an *idea* of an end to be reached, the attainment of which will satisfy some instinctive or acquired need, results; (3) when satisfaction of an acquired

need, functioning at the time the adjustment is made, is the immediate result. In these cases a type of adjustment not instinctively demanded and not originally in itself pleasing reaches a point where it is in itself satisfying. The value of the experience is intrinsic.

Little need be said concerning the first class of adjustments in addition to our discussion of instincts in the previous chapter. When one finds himself in a situation which threatens bodily harm, he instinctively tries to get out of the way. In the presence of materials, children instinctively handle them, or make a noise with them, or attempt to construct something. The schoolboy, with his questions, his collection of stamps, his adherence to his gang, is making adjustments which satisfy instinctive needs.

Under the second class are included reactions in which the satisfaction of the instinctive need is not the immediate result, and those cases where satisfaction may be explained only by reference to an acquired need. The essential characteristic of this class of adjustments is the fact that the idea intervenes. It is for the satisfaction of our *idea* of an end which may be remote for which the adjustment is made. A pupil may try to read well because he has the idea that reading well pleases the teacher. The end desired may be simply to get along with the teacher without the discomfort of a scolding, or because of his instinctive desire for praise. A boy may labor diligently in building a sled because of his idea of the pleasure which will result to himself or possibly to others. A group of children may save their pennies to buy books, instead of satisfying their desire for candy, because of their idea of satisfaction to be derived from the books to be bought. A man may endure many hardships because of his idea of future wealth, political preferment, fame, or other good which he hopes will result.

After a time activities which were stimulated by the idea of a satisfactory end to be achieved may be repeated for their own sake. This gives us our third class of adjustments. The

boy may find it very difficult to spend five hours a day with books, while the man finds his chief delight in this form of activity, altogether aside from a result beyond his present satisfaction. A child may begin to read because of the authority of the teacher and his fear of unpleasant consequences, and yet may later come to find great delight in reading. In teaching we should strive to bring as many as possible of the adjustments to be made under this last category. The boy or girl who finds his greatest satisfaction in making the adjustments, in gaining the experience, in doing the work that the school provides, is getting the best possible preparation for the life of the man or woman who finds his own greatest joy in his everyday activity. We need not be discouraged because of the seeming impossibility of the task, since its achievement would indicate perfection, toward which we strive, and which, because it is perfection, we never achieve. Adjustments are to be made, experiences must be had; and our appeal, whether based upon the satisfaction of instinctive tendencies, the idea of ends near or remote, or the satisfaction of acquired needs which are socially advantageous, must be the highest appeal which can now be made with the assurance that the resulting reaction will be secured.

There is one point which all of these situations which call for adjustment have in common; that is, satisfaction. This fact is fundamental in teaching. Not only are we limited in our work by native tendencies and capacities, but the results must give satisfaction, else the reaction induced will tend not to be repeated. Of course satisfaction or pleasure is a relative term; possibly it would be fairer to say that the individual reacts in the way which will result in the least dissatisfaction or pain. A boy may dislike to write in a copybook, but he may prefer that to a whipping or to being kept after school. There is one other possible misconception which must be guarded against. That which the individual considers most satisfactory may not be best for his well-being, nor for the welfare of others

with whom he associates. It is the work of the teacher to encourage adjustments which are socially desirable, and to make unpleasant the results which are socially disadvantageous, even though they originally gave satisfaction to the individual.

Corresponding to the types of adjustment mentioned above are the types of attention. When the adjustment is made in response to an instinctive tendency to react, we have what is called *passive* or involuntary attention. The boy who looks at the door when it opens, who makes a paper boat instead of doing his work in arithmetic, or who talks to his neighbor about the ball game they are to play after school, is passive so far as any attempt to control his mental activities is concerned. He is following the line of least resistance. He does not will to make these adjustments, or to attend to these things; hence we say that he attends involuntarily, that he is passive in the situation.

A second type of attention is that in which the individual makes an adjustment, follows a given line of activity, voluntarily. He is active in his determination to accomplish certain ends, and in order to secure these results he resists the tendency to wander, to give his attention to other elements in the situation which may be natively more attractive. This type of attention we call *active*. We have this type of attention wherever the individual works for the satisfaction of his *idea* of an end worthy to be accomplished. It corresponds to the second class of adjustments mentioned above.

Through the exercise of active attention over a considerable period, the necessity for effort, for the exercise of the will in order that we may not wander from the main purpose, becomes less and less, until finally a passive attitude is again reached. This type of attention is designated as secondary passive attention.[1] It corresponds to the third type of adjustments named above.

[1] For this classification of attention, see Titchener, *Primer of Psychology*, Chapter V.

In teaching, we begin most frequently with passive attention; we work most earnestly to secure and to hold active attention; and if our work is successful, children will reach the stage of secondary passive attention, at least with reference to some of the activities found in the school.

In the first grade, in the beginning reading class, the teacher appeals to the children on the basis of their instinctive delight in movement, their desire to be like or to excel others, their pleasure in drawing with pencil or crayon, their love of a good story, and other like instinctive tendencies to react. The adjustments made are in response to instinctive needs, and the attention is largely passive. Gradually, as the work progresses, the ends to be achieved will become more remote, and instead of immediate satisfaction of instinctive needs, the children will work for the satisfaction of their ideas of ends which are desirable, whether based on instinctive or acquired needs. They may work diligently in the phonic or word drill because they have the idea that this must be done in order to read the story, and the end ultimately to be satisfied may be to give pleasure to others. The adjustment is made here in response to the idea of an end to be secured, which represents the satisfaction of a need which probably has been acquired in the school or at home. Later in the history of these same children they may read, overcoming whatever difficulties may present themselves, simply because this process is for them in itself worth while. Here we have the adjustment which gives immediate satisfaction of an acquired need, and the type of attention which has been designated as secondary passive.

The problem for the teacher is to secure continued attention to one thing. Almost any exercise which the school offers will be interesting for a brief time because it is something new. The difficult task is not to get attention, but to hold it. Children attend to the situation at hand just as long as it proves more attractive than some other. The boy who is called inattentive may be most attentive to the plan he is making to

earn money to go to the circus. The teacher must endeavor to discover ends sufficiently attractive to command the active attention of children for a considerable period. The child must be willing to exert himself, and the motive for his effort must be strong enough to bring him back to the task in hand every time that he tends to wander. Often the success of the work will depend upon a recognition of the fact that it is very difficult to attend for any considerable period to a situation in which the elements do not vary. We may secure continued concentrated attention by recognizing the fact that variety in procedure, or in appeal, will make it possible for the child to keep his attention fixed. Take, for example, a topic in geography. The teacher will question to bring out different aspects of a topic, show the children pictures or use illustrative materials, have children read the map, tell a story or incident relating to the situation under consideration, and in this manner keep children actively thinking on one topic for half an hour. We shall discuss at some length the problem of aim, in connection with the inductive development lesson. Suffice to say here that often we fail to secure the continued attention of children because we ask them to attend to that which for them lacks interest or significance.

Children work hardest when the problem to be solved is one that they recognize as their own. They make adjustments which mean immediate satisfaction, or which they believe will ultimately give satisfaction. Our difficulty is often that the end we set up is too remote. The idea of becoming a well educated man will not ordinarily be powerful enough to keep a boy at work on a composition, but the desire to be the author of a paragraph in the school paper, to write to a boy in another city or country, or to compose part of a drama which the class will act for their friends, may mean the hardest sort of work, the most concentrated attention of which he is capable.

The children with whom we work come to us with tendencies to react, and are capable of reacting in a great variety of ways.

They learn by making adjustments to a great variety of situations. The teaching process consists in providing the situations and the stimuli to action, in guiding the individual in such a way that the undesirable reactions will be eliminated by disuse or because the results are unpleasant, in making permanent desirable native reactions or those which have been grafted upon or derived from them by making the results pleasant.

The teaching process is, in general, as described above; but the actual work of the teacher varies greatly as she strives now for one end and again for another. There is a methodology of habit formation which the teacher must command if she is to do successful work in equipping her pupils with desirable habits. If our problem is one that lends itself to the inductive method, we have one sort of procedure; while if the thinking involved is deductive, certain other elements enter. There is a kind of work in which we aim primarily for appreciation, and at another time we are chiefly concerned in teaching children how to study. The proper conduct of a review or examination, and the type of exercise commonly known as a recitation lesson, need to be discussed in some detail. In the chapters which immediately follow, each of these types of schoolroom exercises will be considered. Success in teaching consists quite as much in working definitely for well defined ends which may be accomplished in this fifteen minutes, this half hour, or during this week, as in keeping in mind the more general aims of education. Indeed, the only way in which we can secure the larger ends is by successfully achieving the lesser tasks. The teacher who knows that she has fixed this desirable habit of thought, feeling, or action, that this bit of knowledge has taken its place in a usable system, that this ideal or purpose has been awakened, that certain methods of work are available for the group of children whom she is teaching, — that teacher can be sure that she is fulfilling her mission.

For Collateral Reading

E. J. Swift, *Mind in the Making*, Chapter VI.
E. A. Kirkpatrick, *Genetic Psychology*, Chapter X.

Exercises.

1. When a teacher raps her pencil against a desk and the children look toward her, what is the type of adjustment made? When will they cease to pay attention to the rap of the pencil? What suggestion would you offer concerning the danger which may be found in rapping the pencil against the desk, ringing a bell, clapping the hands, shouting "be quiet"?

2. Name some exercises in arithmetic in which you may depend somewhat upon instinctive adjustments to insure progress.

3. Where do you think you will find the most instinctive adjustments, — in geography, arithmetic, drawing, English composition, or physical training?

4. A boy who had done poor work in algebra improved greatly when changed from a class taught by a man to one taught by a woman. How would you account for the change, taking it for granted that the teachers were equally competent? What type of adjustment did the boy make?

5. Why is it that any new subject will prove attractive for a short time, and children will later show a lack of interest in the work?

6. Is there any difference between making a class period interesting and finding a motive which appeals to children which will lead them to desire to cover the material which you have assigned?

7. Which is the better, to have a girl study her geography lesson to please the teacher or to have her at work trying to solve a problem in which she is interested?

8. What sort of results do teachers secure who compel children to learn their lessons through fear of being ridiculed or otherwise punished? If these children know as much as other children whose teacher has them at work satisfying their idea of pleasure, — which will result in being able to read well to the class, prepare their part of the class drama, or investigate in fields in which they are much interested, — would you, then, consider the first sort of teaching as satisfactory as the second?

9. To what degree can you depend upon the awakening of intellectual interests to provide a motive for good work on the part of pupils?

10. Do you think the following list of questions would prove intellectually stimulating to a group of sixth-grade pupils: —

"Where is Philadelphia? What is the capital of New York? What

are the principal rivers of the Middle Atlantic states? Where is Pittsburgh? For what is Pittsburgh noted? What river forms the eastern boundary of Pennsylvania? Bound Virginia. Locate the capitals of the states in this group. Name two valuable products raised near the coast. Describe the surface of this group of states."

11. How many children in your class find satisfaction in their school work sufficient to keep them at it if no marks were given and no one compelled them to attend school? Are there some subjects or parts of subjects where you secure this sort of enthusiasm for school work? Why do you succeed better in these phases of school work than in others?

12. What is wrong with the boy who is quiet during the recitation, apparently absorbed in the work, but who gets nothing out of it?

13. Why does the teacher who speaks in a loud tone of voice in order to compel attention have to speak louder and louder as the day advances?

14. What is wrong with a class which does good work in long division at the beginning of the arithmetic period, and very poor work at the end of thirty minutes?

15. Give examples of passive attention, active attention, and secondary passive attention, from your own classroom work.

16. Describe the situations in which you believe your children did the best intellectual work. How do you account for the excellence of this work?

CHAPTER IV

THE DRILL LESSON

MANY responses of thought and action must be reduced to an automatic basis. It is the function of the drill lesson to accomplish this result. In some schools this type of work has been overemphasized, while in others it has been neglected. It is a mistake to spend the whole of a child's time and energy drilling him upon that which some one else has thought. He must think for himself while a child, if he is to show intellectual strength as a man. And it is just as much a mistake to believe that the greatest progress in thought or action can be achieved without careful attention to the formation of desirable habits. Probably there is little need to-day to argue against this conception of teaching, which makes the teacher simply and solely a drill master. Our respect for the native tendencies and for the experiences of children, our emphasis upon doing, our belief that the best preparation for future efficiency is to be found in present childish efficiency, all refute any such narrow view of the educative process. There is, however, in some quarters a danger that this insistence upon thinking and doing may be construed to mean that drill work is no longer necessary. There are children who are terribly handicapped in their later work because they have not learned to spell common words, to write a legible hand, to give without hesitation the addition combinations, to reproduce the multiplication tables, to use without much thought the processes commonly employed in arithmetic work. They find difficulty in reading, because they lack that knowledge of phonetics which would make easy the recognition of unfamiliar words in

their reading; they stumble in geography, fail in music, lack ability to comprehend their work in nature study or history, all because facts essential to further progress, once presented and understood, were not reduced to an automatic basis by carefully conducted drill exercises. If it is clear that much of the knowledge which children acquire must be reduced to the basis of habit, we may next inquire just how this drill work is to be related to the other part of the school work.

Question of motive: In the formation of habits not provided for by native tendencies to react, the occasion for making the adjustment is, as in the case of our thinking, the recognition of a need. Our first attempts to talk or to use our limbs were due solely to the compelling force of instinct, but later we learned a foreign language or achieved success in the high jump because we had a definite aim in mind. So far as the teacher is concerned with habit formation, she can hope to utilize instinctive tendencies, but may not depend upon them alone to secure the result. A motive must be provided for the work. The stronger this incentive, the greater will be the attention given to the work in hand and the sooner will the desired result be secured. Very much of the drill work which is done is well-nigh futile because it is imposed upon children. They do not see its significance, and feel little interest in the accomplishment of the results demanded.

Ideally, drill lessons should come when the children see that their future progress is conditioned by successful formation of the habits involved. And this is not so impossible of accomplishment as might appear at first sight. If the material given to children to read in the first grade is of such a nature that they really care to read it, they are very quick to see that word drill, and later phonetic drill, will help them to secure the end desired. Of course the reply may be made: "What is the use of bothering one's self with this attempt to make a rational appeal to children? They will be completely satisfied if you simply keep them at it. It is a game for them. They

enjoy it simply because they delight in accomplishment." One might reply to such a statement by calling to mind the fact that the school exists to develop rationality. You may be perfectly sure that frequently enough the children, and later the men and women, will be driven or led without any appeal to reason. It will undoubtedly be true that we shall have to appeal to motives other than rational; but surely this appeal to reason should be made, and, if our education is successful, should be increasingly potent as we advance from grade to grade. Even when a rational motive has been made the point of departure, we shall have to use many devices to keep alive the child's original intention. But let us frankly admit, both to ourselves and to the children, that these subsidiary aims are merely aids in helping us to achieve the more worthy aim. If such a standard of motive were applied throughout our work, we should probably find it necessary to postpone certain activities which we insist upon for no reason which a child can understand, until there was some real use for the habit to be formed. We might even find ourselves compelled to eliminate much which finds no application in real life. The occasion for drill is found in the demand for automatic control of thought or action, and much of the later success of the children in thinking and doing will be conditioned by the quality of the work done in these drill exercises.

Knowing what to do: A clear idea of the result to be accomplished is, of course, involved in the notion or aim as it has been discussed above. The importance of this element in habit formation cannot be overemphasized. It may seem superfluous to call attention to the fact that every child should have a clear idea of what is to be done before the drill work begins; but it sometimes happens that the teacher takes too much for granted. Children stumble and fail, or do nothing at all, simply because they do not know what it is all about. It would seem impossible that any group of pupils should be asked to commit to memory anything which they did not un-

derstand, and yet we are constantly reminded by their later interpretations that they have not understood. Such logical organization is not always possible, nor, indeed, even desirable, as, for example, in learning addition combinations. In such a case the value of the habit is largely due to the fact that we no longer attempt to rationalize the process nor attempt to fix it in a logical series. But whether the task be the memorizing of a poem, the learning of addition combinations, the formation of the habit of neatness, or the gaining of skill in handling a saw, it is essential that the child know just what is to be done and that he be provided with an adequate motive for doing it.

Repetition with attention: After a child knows what to do, has the right idea, and the greatest possible motive for doing has been provided, the teacher's problem consists in keeping alive the desire to achieve the result while the process of repetition is going on. A child learns to spell a word not simply because he repeats the letters or writes them in the correct order a hundred times. We all have knowledge of cases in which this sort of repetition has seemingly resulted in no advancement. The most economical method of learning to spell requires that the maximum of attention be given while the letters are repeated. The story of the boy who, after he had written after school the phrase "I have gone" a hundred times, wrote at the bottom of his paper for the information of the teacher, who had left the room, "I have went home," is a case in point. The trouble with this boy was not that he had not repeated the correct form often enough, but that he had not attended to it. He had failed to realize the significance of what he was doing. Doubtless his attention, instead of being fixed on the work in hand, was more largely given to the game of baseball his companions were playing, or to the prospect of the delights of the swimming pool. Much of the concert work that one hears shows a lack of attention on the part of the larger part of the class except in so far as is necessary to follow the leaders.

Such work is undoubtedly helpful to those who lead, but it is of little use to the others who take part. It is a very good plan to test concert work by listening closely to distinguish those who are carrying the burden, have them stop, and measure the success of the work by the result which can then be had.

Means of holding attention: No matter how strong the motive with which we start, any one of us will grow weary when the task imposed requires many repetitions. It is even more difficult for children to keep their attention fixed for any considerable length of time. We must, therefore, plan carefully to conduct the drill in such a way that the maximum of attention may be secured. Among the devices which are employed, one of the most important is variation in procedure. Suppose, for example, we wish to spend ten minutes in drilling children on addition combinations. The best results will not be secured by spending the whole time in either oral or written work. Probably the maximum of attention and consequently of result could be secured by dividing the period into three parts: one devoted to oral work, holding every one responsible for every answer; one to written work on a series of problems provided on number cards or mimeographed sheets; and one to work of the same sort placed on the blackboard. Of course there is nothing peculiarly good in the order of exercises suggested above, beyond the fact that they give variety. The next day the teacher would want to change the order or to introduce a new type of exercise.

Another means of securing the maximum of attention is to place a time limit. Have the children see how many problems they can solve, how many stanzas they can commit to memory, or how many words they can learn to spell in a period of ten minutes. It makes a very great difference whether the teacher says "work on this task for ten minutes," or "see how much you can get done in ten minutes."

This leads us to consider a third means commonly employed

to secure earnest work, the appeal to emulation. The desire of a pupil to do as well as other members of his class, or the desire of a class to equal the record of another class of the same grade, will do much to keep attention fixed on the work. Neither the devices mentioned nor any others will avail unless the teacher is wide-awake and alert herself. The greatest single reason for lack of interest and attention on the part of the class is found in the indifference and lack of energy on the part of the teacher. It is useless to expect vigorous action on the part of pupils, when the teacher is half asleep or otherwise either physically or mentally incapacitated for good work. It is possible at times for a teacher to arouse her own flagging interest by just such appeals as have been suggested above as applying to children.

Necessity for accuracy in practice: Our nervous system is so constructed that to do anything once leaves a tendency to do the same thing the same way when next we are placed in a similar situation. It is bad to allow careless work or random guessing, not simply because the result in this one case may be wrong, but more especially because the tendency to the wrong reaction is there and must be overcome before the correct action can be fixed as a habit. If a child, the day after he has studied the word *foreign*, has occasion to write the word and does not know how to spell it, it is a mistake to permit the word to be written incorrectly. It would be better to have the child discover for himself or find out from the teacher the correct form before attempting to write the word. It is well to insist on the necessity for absolute accuracy. Better by far discontinue the drill while every one is still fresh enough to give close attention to the work in hand and while the responses are accurate, than to make the serious mistake of allowing the work to be done carelessly or to flatter one's self that approximately accurate results are good enough. Better be sure that in the drill work on the multiplication table to-day the children have invariably given the correct response when we

have asked them how many are six times three and six times four, than to have attempted to teach the whole table with the knowledge that one fourth of the answers have been wrong. We should not be misled; the child who gave us a wrong answer is not simply wrong this time, but, what for us is more important, will tend to be wrong ever after. We have more than doubled the task we set out to accomplish. We must now get rid of the tendency to give the wrong answer, and then teach the correct one. In our later consideration of the moral life of the child, we shall have occasion again to point out the significance of this principle.

The periods elapsing between repetitions or series of repetitions should be gradually lengthened: The fixing of a habit so that it shall always thereafter be available to determine our thought or action requires that we do more than arrive at a point where the response can be readily secured in a given situation. The word which your pupils spell so readily, the table which they recite so glibly, the poem which they have so completely mastered, will apparently have completely disappeared next week or next month. Of course the work you have done is not without effect. It will be easier to learn the word, table, or poem again. But the child should command these results for which we labored *now*. There is a body of knowledge, a group of actions, which ought to be available automatically at any time. If we are to succeed in fixing this body of habits, if they are to be made permanently available, we must recognize the fact that when we have first secured the result desired we have only begun the process. The boy who recites Lincoln's Gettysburg Address without any mistakes to-day has made a good beginning; but if that address is worth remembering always, he must recite it several times during the next week, and go over it again next month, next term, and next year. There will come a time, depending upon his native retentiveness and upon his method of memorizing, when it will no longer be necessary to repeat it for the sake of fixing the address in

memory. It will not take a great deal of time to recall that which we believe we have fixed permanently last week or last month, and by doing this we shall add greatly to the probability of possible recall a year or ten years from now, and incidentally discover, much to our surprise, how much has already escaped.

Teachers often unconsciously follow the cramming method in their attempt to have children advance rapidly; and, as is always the case when this method is employed, what has apparently been learned is soon forgotten. Fortunately for all concerned, many of the responses which need to be reduced to an automatic basis are demanded over and over again as the child progresses from grade to grade, and are thus provided for. But much that is now lost could be retained, and each succeeding teacher could accomplish more than is now customary, if only this principle of habit formation were commonly observed.

In the case of a series of responses to be made automatic, be careful to include each member of the series: Much of our work is weak because it lacks system. If we are engaged in teaching addition combinations, we should be absolutely certain that we have taught every possible combination. If we want to be sure that children know how to write numbers up to one million, we must have given them drill on all of the possible difficulties. If children are always to respond correctly when problems involving two steps in reasoning are presented, we must have been careful to provide for the purpose of drill all of the combinations of situations involving addition, multiplication, subtraction, and division which can occur. For any other similar field, the same care must be exercised.

The greater part of the time should be spent in drilling upon that part of the work which presents special difficulty. There is no use in spending one's time equally on all of the words included in any list. Some of them can probably be spelled with little or no drill, while others may require very careful study and many repetitions. In any other field the same

situation will be found. Many of the responses desired will be reduced to the basis of habit readily, and a few will require continued attention. It is the function of the teacher to discover these special difficulties as soon as possible, to clear up any obscurity in ideas which may stand in the way, and then to drill with special reference to these special cases.

Briefly summarized, it is the function of the teacher in guiding pupils in the formation of habits to see to it that they have the correct idea of the thing to be done; to secure the maximum of motive and to maintain the maximum of attention during the process; to guard against carelessness and lapses by insisting upon the accuracy or the adequacy of the responses; to provide occasion for repetitions from time to time with gradually lengthened intervals; to be careful not to omit any of a group or series of responses equally important; to spend the greater part of the time and energy of both herself and pupils upon those cases which present special difficulty.

For Collateral Reading

W. C. Bagley, *The Educative Process*, Chapter XXII.

S. H. Rowe, *Habit Formation and the Science of Teaching*, Chapter XIII.

Exercises.

1. Name the subjects or parts of subjects in which drill work is essential.
2. What was there of value in the old-fashioned method of choosing sides and "spelling down"?
3. Name some of the devices which you have used in drill work, and justify their use.
4. What argument can you advance for postponing the beginning of writing lessons until the middle of the first year or later?
5. Which would be better: to present the multiplication table in regular series ($3\times1=3$; $3\times2=6$; $3\times3=9$, etc.), or in some other order? ($3\times5=15$; $3\times2=6$; $3\times7=21$; $3\times4=12$, etc.)
6. If a boy was writing a composition and wanted to use a word that he did not know how to spell, what would you expect him to do?

7. What are the objections to learning rules of spelling?

8. In a drill lesson in arithmetic, which would you consider the better: to have the children work as individuals for the highest score, or to divide them into groups and have one group try to do better than the other?

9. Criticize the following lesson, as a fourth-grade exercise in spelling. The teacher placed the following list of words on the board, and told the pupils to study them.

believe	conduct	have
forget	agriculture	manufacture
store	plow	wagon
cultivate	harness	exports
crops	dairy	freight
drought	fertilizer	transport
depot	wheat	

10. A teacher who spent a large part of her time having the class recite the multiplication tables in concert was distressed to find that a majority of the class did not know the tables when examination time came. What was the explanation?

11. In a school where the children had a forty-minute period for a writing lesson, the results during the last ten minutes were invariably poorer than during the first quarter of the period. How could you hope to change the result?

12. In some schools the teachers always spend two weeks before the examination period in review of the term's work. Why are such reviews necessary in some cases, while children do just as well in examinations in other schools which do not have this review period?

13. A teacher taught children that they could always tell how much nine times any number was by subtracting one from that number for the tens place, then adding a number which will make nine for the units place (*e.g.* $5 \times 9 = ?$ $5 - 1 = 4$ (tens); $4 + 5 = 9$. $\therefore$ 5 is the number of units, and $5 \times 9 = 45$). Is this a good way to teach this table?

14. How can you know when it is wise to discontinue drill work?

15. Do you think it necessary to plan for a drill lesson?

16. Could you plan your work so that your pupils will know at the end of the year all of the poems you have taught during the previous eight or ten months?

CHAPTER V

THE INDUCTIVE LESSON

We are skeptical to-day of that sort of teaching which aims mainly to equip children with a body of accepted knowledge in order that they may some time find use for this body of information in later life. We emphasize, rather, the control of mental activity which makes for the discovery of truth and the avoidance of error. Thinking of this sort is purposeful. We control or direct our ideas toward some end, toward the solution of some problem. One great purpose of teaching must be to provide the opportunity and the stimulus for this kind of thinking. We may not be able to lay down any fixed order of procedure, nor to devise any set of rules whereby children may be trained to be good reasoners; but we can consider what is involved in the process, point out the possibilities of interference, and suggest some of the means to be employed in encouraging this type of mental activity on the part of children. In this chapter we shall confine ourselves to that type of reasoning which we call inductive. This type of schoolroom exercise has usually been treated as composed of five steps; namely, preparation, presentation, comparison and abstraction, generalization, and application. We shall employ this classification to guide us in our discussion of the process.

Preparation: To prepare a child to reason in a given situation from the data in hand to the conclusions which must of necessity follow, it is first of all necessary that he should see that the situation presents a problem. We reason only when we have some aim or purpose which can be satisfied by the process. But if consciousness of aim or problem is at the foundation of this type of thinking, and if we are to deal with

children in groups, it is essential that the situation which involves the problem be made the common possession of all. The step of preparation presents these two problems to the teacher: (1) to find a basis in experience already had, or to provide the experience which involves the problem to be considered; (2) to make the children feel the necessity for the solution, *i.e.* to make the problem vital to them.

In considering the necessity for common experience as a basis for discovering the problem to children, we are dealing with the principle of apperception. Briefly stated, it is this, — that any object or situation has meaning for us only as it connects itself with and is interpreted by our previous experience. Suppose, for example, that a group of first-grade children were asked to tell what made seeds grow. It is possible that some of them would not know, could not interpret from past experience, the meaning of seeds. If the class were at work in a large city, we could be sure that many had never been conscious that growing plants had any connection with seeds, and there would be few, if any, who had ever noticed the conditions under which such growth takes place. The first problem for the teacher in this case would be solved only when, through recall of past experiences, observations, or experiments, the experience "seeds growing" became the common possession of the group. This is an extreme case, one in which the experience which involves the problem is entirely wanting. At the other end of the series, we may have a problem for consideration, the basis for which is found in experiences common to all children. But even though this be the case, there will still be need for the recall of the experience and for making prominent some factor heretofore unnoticed before the children will be ready to reason. We may suppose that all children have had experience with streets or roads, but we shall want to recall many of these experiences in order to make significant the problem of transportation which we wish to consider in the class in home geography.

The step of preparation has only partially accomplished its purpose when the experience necessary to the realization of the problem has been recalled or provided. Still greater skill is required in making the child conscious of the problem. Indeed, it may well be argued that in the curriculum as it is at present organized, very many of the problems that we ask children to solve are problems for them only because we, as teachers, require that that certain piece of work be done. Often the child's problem consists mainly in avoiding, as far as possible, the work which we require, which has little or no significance for him. Children would do much more thinking if we were only more careful to give them childish problems to solve. Too frequently the organization of knowledge which we impose is influenced exclusively by our adult logical conceptions. Not that children should be illogical, but rather that child logic and the child's ability to reason depend upon his ability to appreciate problems, upon his experience, and upon his ability to interpret that experience. When we impose our adult point of view upon him, when we ask him to take *our* problem and with the data that *we* supply ask him to work out *our* solution, whatever else may be said of the exercise, it may not be called an exercise in reasoning by children.

If we do respect the child's experience and point of view, the task still remains of making all of the group of children we teach conscious of the aim as *their* problem. There is no greater test of teaching skill than this. Can the teacher, after having brought to mind the experiences which are relevant to the work she wishes the children to do, make them conscious of a lack in this experience; can she awaken the need for further consideration of past experience and a desire to reconstruct and to amplify it? In proportion as she is able to accomplish this result, we may be sure that children are reasoning upon problems which are vital to them, and that the motive has been provided which will secure the maximum of controlled intellectual activity on their part. The best single test of the

accomplishment of this ideal is to require that the statement of aim be made by the children themselves as a result of the guidance we have given. This conception of the meaning and significance of the aim suggests the solution of the difficulty which some people find in harmonizing the idea of instruction with the doctrine of self-activity.

Instruction, when properly conducted, does not impose the ideas, the problems, or the conclusions of adults upon children. Rather we are concerned in instruction with the child's experience, his tendency to react, his need of adjustment; and our function as teachers is to guide him, to stimulate him to his own best efforts, to insure the maximum of self-activity while we guide this activity toward the accomplishment of ends which are desirable. The difficulty is, of course, that the problem for solution at any given time may not be equally vital to every member of the group. Here is where the element of control enters somewhat in opposition to the self-activity of the individual. But this condition of affairs is necessarily true both in school and out of it, for society sets up for us certain norms or standards of experience which must be realized by all, and we must for the sake of economy handle children in groups. If the problem is not beyond the child's comprehension, if it deals with situations which are significant to him, if the solution derived has some bearing on his future action, if he has carefully scrutinized his experience in the light of the problem stated and has brought to bear those elements which are significant for its solution, we may be confident that the activity resulting is closely akin to that which is found in the controlled thinking of men the world over.

In order that it may be more easy for children to focus their attention upon the problem in hand, there is considerable advantage in a clear, concise, concrete, and preferably a brief statement of the aim.[1] A problem is half solved when one can state it clearly. So long as the problem is not sufficiently well

[1] McMurry, *Method of the Recitation*, Chapter VI.

defined to admit of accurate statement on the part of pupils, there is danger that there may be much wandering in its consideration. One of the great lessons to be taught in work of this sort is the need of examining the ideas as they suggest themselves to see whether or not they are relevant.

The argument as it has been stated above points to the statement of aim as the culmination of the step of preparation. This does not mean that a considerable period must always elapse in the conduct of an exercise of this type before the aim can be stated. There are occasions, and when the teaching has been good they should be frequent, when the lesson should begin with the statement of the problem discovered in a previous lesson and made clear in the assignment of work. In other cases the same aim may hold for several days; *i.e.* until the problem is solved. In general, as we advance through the grades, the ends for which children work should become relatively more remote, and the achievement of these ends should require a longer period of work. There is an advantage in setting up subsidiary aims which will make steps of progress in the realization of the larger purpose.

Another distinction that it is well to keep in mind concerns the development of intellectual interests on the part of children. The characteristic aim for a first-grade child may make its appeal chiefly to his desire for satisfaction, which has little intellectual significance; but education fails if it does not make for an increase of interest in intellectual activity. For example, a first-grade boy may be led to count because he wants to be able to tell how many marbles he has, or how to measure the materials he uses in constructive work; while the mathematician may work night and day upon a problem of mathematics because of a purely speculative interest in the result. We may not hope to produce the great mathematician in the elementary school, but we may hope after a certain point has been reached in our study of arithmetic that a boy will recognize the necessity for drill in addition simply because he

realizes that in the ordinary affairs of life this knowledge is required.

Presentation: The full realization of the problem to be solved involves a consideration of data already at hand in experience. When we have the problem clearly in mind, we examine this experience more carefully to see what bearing it may have upon the solution, or we gather further data, observe more critically or more extensively, or experiment in such a manner as to involve the solution of our problem. What is the function of the teacher during this part of the process? There is no single answer to this question. Sometimes the work of the teacher will consist almost wholly in helping children to recall their past experience and to apply it to the question at hand. At another time, when experience is lacking, the teacher must direct children to the sources of data, guide them in their observations or experiments, or even give them outright all of the data that she can bring to bear on the situation. It will not always be economical to wait for children to gather the data for themselves, just as it is not *always* feasible to require them to reach conclusions for themselves. There are times when the best teaching consists in demonstration, and occasions arise when the only feasible course for the teacher is to literally flood the children with data from which they may draw their conclusions.

Again the problem of gathering data becomes the problem of memory. We want children to think, and we should insist that they gather facts with reference to the solution of some problem; but the *solution* may not always be immediate. We may suspend judgment while we gather further facts and organize them. The facts gathered for one purpose, when rearranged with reference to a new problem, take on a new meaning. If this be true, we may not in our zeal for clear thinking neglect the tools with which we work. There may be some people who have a great many facts and who reason little, but no one can reason without data. Our ability to think

logically upon any topic is conditioned by our ability to see facts in new relations, to reorganize our data with reference to new problems; but facts we must have, and a memory stored with facts is one of the greatest aids to thinking.

One of the means mentioned above for the gathering of data was observation. It is necessary that we appreciate the fact that observation involves something more than having the thing present to the senses. Our observations are significant for our thinking when we have clearly in view the problem which the observations are to help solve. Teachers sometimes make the mistake of supposing that when children have objects with which to work they have a problem. It is not unusual to hear teachers speak of objective work as concrete work. Now the concreteness of a situation is not at all dependent upon the presence of objects. Logically a situation may be concrete, and yet present no objects to the senses. On the other hand, objects may be present, children may be directed to use them, and yet in the absence of any real problem the work done may be of the most abstract sort. Objects help to make a situation concrete when the problem under consideration demands their presence, or when they help to make clear the situation under consideration. For example, children may have peas or beans in solving problems in addition; they serve to present objectively the reality which is symbolized by the teacher or pupils in their written work, but this does not make the work in addition concrete. The concreteness of these exercises will depend upon the need which children feel of the ability to find the sum of two or more numbers. The beans will be significant, beyond their use as objects, to illustrate the one-to-one correspondence between symbolic representation and reality, only if the problem of summation which at that time engages their attention concerns the sum of certain numbers of beans. Indeed, it may be claimed that the use of one set of objects continuously to illustrate a process in arithmetic hinders rather than helps the child in his ability

to reason in this situation, since he may come to consider this chance relationship of beans and addition as essential. He may think that he ought always to add when he is given beans.

A good illustration of the necessity for a well defined problem for guidance when observations are to be made is found in the futility of much work that is done, or rather left undone, when children are taken on excursions. The directions which follow for the conduct of excursions are those which should be followed whenever work in observation is required, those which have reference to the handling of a large group of children in the field being added.

1. The teacher must have clearly defined in her own mind the purpose of the observation. If the teacher has not definitely formulated the problem, the observation of the children will surely be purposeless.

2. It is not enough that the teacher know just what data she expects the children to gather toward the solution of a particular problem; she must know exactly what data are available under the conditions governing the observation.

3. The preliminary work must have prepared children for their observations by giving them very definite problems to solve. Often it will be advantageous to have these problems written in notebooks.

4. Children not only need to want to see, but also need to be directed while they are observing. Nothing is easier than to look and not see that which is essential.

5. It is always advisable to test the success of the observations while they are being made. There is nothing more difficult than to correct a misconception growing out of careless or inadequate observations.

6. It is well to remember that not merely number of observations counts in the solution of a problem. It is rather observations under varying conditions which give weight to our conclusions. One intensive observation may be worth a thousand careless ones.

7. When children are taken on excursions, great care must be exercised to keep them under proper guidance and control. The organization of children into smaller groups with leaders who are made responsible for their proper observance of directions will help. These leaders should have been over the ground with the teacher before the excursion. The assistance of parents, teachers, or of older pupils will at times be necessary.

8. There should be definite work periods during the excursion, just as in the schoolroom or laboratory.

9. A whistle, as a signal for assembling at one point, will help in out-of-door work, provided it is clearly understood that this signal must be obeyed immediately, and under all circumstances.

Comparison and abstraction: With the problem clearly defined and the data provided, the next step consists of comparison and the resulting abstraction of the element present in all of the cases which makes for the solution of the problem. In the ordinary course of our thinking the sequence is as follows: We find ourselves in a situation which presents a problem which demands an adjustment; we make a guess or formulate an hypothesis which furnishes the basis for our work in attempting to solve the problem; we gather data in the light of the hypothesis assumed, which, through comparison and abstraction, leads us to believe our hypothesis correct or false; if the hypothesis seems justified by the data gathered, it is further tested or verified by an appeal to experience; *i.e.* we endeavor to see whether our conclusion holds in all cases; if this test proves satisfactory, we generalize or define; and lastly this generalization or definition is used as a point of reference or truth to guide in later thinking or activity.

There is danger that we may overlook the very great importance of inference in this process. We cannot say just when this step in the process will be possible, but it is possibly the most significant of all. A situation presents a problem.

Our success in solving the problem depends upon our ability to infer from the facts at our command. Often many inferences will be necessary before we succeed in finding the one that will stand the test. Again with the problem in mind we may be conscious of a great lack of data and may postpone our inference while we collect the needed information. There is one fallacy that must be carefully guarded against in dealing with children, as also with adults; namely, the tendency once the inference has been made to admit only such data as are found to support this particular hypothesis.

It is this ability to infer, to formulate a workable hypothesis, which distinguishes the genius from the man of mediocre ability. It is the ability to see facts in new relations, the giving of new meaning to facts which may be the common possession of all, that characterizes the great thinker. Other people knew many of the facts; but it took the mind of a Newton to discover the relationship existing among these data which he formulated in the law that all bodies attract each other directly in proportion to their weight and inversely in proportion to the square of the distance separating them. As we teach children we should encourage the intelligent guess. We would not, of course, encourage mere random guessing, which may be engaged in by children to have something to say or to blind the teacher. A child who offers a guess or hypothesis should be asked to give his ground for the inference, should show that his guess has grown out of his consideration of the data in hand. It is fallacious to suppose that this kind of thinking is beyond the power of children. They have been forming their inferences and testing them in action from the time that they began to act independently.

There is one element in the consideration of the step of comparison which cannot be too much emphasized, and that is that it is not the comparison of things or situations which present striking likenesses which gives rise to the highest type of thinking. To look at a dozen horses and then to conclude that all

horses have four legs is merely a matter of classification; to observe that the sun, chemical action, electricity, and friction produce heat, and to arrive at the generalization from these cases, apparently so unlike, that heat is a mode of motion is the work of a genius. In general, it is safe to say that we would greatly strengthen our teaching if we were only more careful to see to it that our basis for generalization is found in situations presenting as many variations as possible. For example, if we want to teach a principle in arithmetic, the way to fix it and to make it available for further use by our pupils is not to get a number of problems all of which are alike in form and statement; but rather we should seek as great a variety as is possible in the language used or symbols employed that is compatible with the application of the principle to be taught. In an interesting article on reasoning in primary arithmetic, Professor Suzzallo has pointed out the fact that children's difficulty in reasoning is often one of language.[1] The trouble has been that teachers have always used a set form, or a very few forms of expression, when they described situations which involved any one of the arithmetical processes. Later when the child is called upon to solve a problem involving this process he does not know which process to apply because he is unfamiliar with the form of expression used. To succeed in teaching children when to add involves the presentation of the situations which call for addition with as great a variation as is possible, *i.e.* by using not one form, but all of the words or phrases which may be used to indicate summation. In like manner in other fields the examples for comparison will be valuable in proportion as they present variety rather than uniformity in those elements which are not essential. Equally good illustration can be had from any other field. If we want pupils to get any adequate conception of the function of adjectives, we should use examples which involve a variety of adjectives in different parts of sentences. In geography the concept

[1] Suzzallo, in *California Education*, June, 1906.

"river" will be clear only when the different types of rivers have been considered and the non-essential elements disregarded.

Generalization: When we feel that we have solved the problem, we are ready to state our generalization. There is considerable advantage in making such a statement. One can never be quite sure that he has solved his problem until he finds himself able to state clearly the results of his thinking. To attempt to define or to generalize is often to realize the inadequacy of our thought on the problem. Children should be encouraged to give their own definition or generalization before referring to that which is provided by the teacher or the book. Indeed, the significance of a generalization for further thinking or later action depends not simply upon one's ability to repeat words, but rather upon adequate realization of the significance of the conclusion reached. The best test of such comprehension is found in the ability of the pupil to state the generalization for himself.

There is very great danger, if definitions or generalizations are given ready-made to children, that they will learn to juggle with words. The parrot-like repetition of rules of syntax, or principles of arithmetic, never indicates real grasp of these subjects. Children think most when the requirement for thinking is greatest, and none are readier than they to take advantage of laxness on the part of the teacher in this respect. It is not only when the formal statement of principles or definitions is called for that the teacher needs to be on her guard. At any stage of the process, if the teacher will only take their words and read meaning into them, some children will be found ready to substitute words for thought. It is really a mistake to tell a child that you know what he means even though he did not say it. Language is the instrument which he employs in thinking, and, if his statement lacked clearness or definiteness, the chances are very great that his thinking has failed in these same particulars. Instead of encouraging children in loose thinking by accepting any statement offered, it would

be much better to raise the question of the real significance of the statement, to inquire just what was meant by the words used. Such procedure will help to make children more careful in expressing themselves, and will inevitably tend to clearer thinking.

Application: Whatever conclusions we have reached, whatever truths we have satisfactorily established, influence us in our later thought and action. But even though this is true, there is a decided advantage in providing for a definite application of the results of the thinking which children have done as soon as possible and in as many different ways as is feasible. In the first place, such application makes clearer the truth itself, and helps to fix it in mind. Again, the conclusion arrived at to-day is chiefly significant as a basis for our thinking of to-morrow, and it is as we apply our conclusions that new problems arise to stimulate us to further thought. Then, too, the satisfaction which comes when one feels his power over situations as a result of thinking is the very best possible stimulus to further intellectual activity. Finally, we need to show children the application of that which they have learned to the life which they live outside of the school. We are not apt to err on the side of too frequent or too varied application of the generalizations we have led children to make. Rather we shall have to study diligently to provide enough applications to fix for the child the habit of verification by an appeal to experience.

A few words by way of caution concerning the inductive lesson may not be out of place.

First: Not all school work can be undertaken on this general plan. There are times when the end to be accomplished is distinctly not the discovery of some new truth, but rather the fixing of some habit. There are exercises which are distinctively deductive, some which aim to produce habits, and others which seek to secure appreciation. But more of this is in the succeeding chapters.

Second: Even when we seek to establish truth, we cannot always develop it by an appeal to the experience of children nor to observations which they can make. We shall have, on some occasions, to supply the data, and in still other cases it will be most economical to demonstrate the truth of the position which we desire to have them take. There are occasions when the solution of the problem is not possible for children. In this last instance we shall have to provide the authoritative statement. Indeed, it may be argued that one of the lessons which we all need to learn is respect for the expert. We cannot settle all of the problems which arise, but we may choose from among those who profess to have found a solution. Our education ought to help us to avoid the quack and the charlatan. The habit of logical thinking on the part of children, and expert knowledge in some field, however small, is the only protection which the school can give against the pretensions of those who represent themselves as the dispensers of truth.[1]

Third: There is a grave danger that we may help children too much. Some teachers interpret the inductive development lesson to mean that each step in the thinking required must be carefully prepared for and quickly passed. They consider that they have taught the best lesson when there has been no hitch in the progress from the statement of aim to the wording of the generalization. The suggestive question which makes thinking on the part of children unnecessary is a favorite measure employed. If we stop to consider what thinking means, we cannot fail to see the fallacy of such work. We all do our best thinking, not when the problem to be solved is explained by some one else and all of the difficulties removed, but rather when we find the problem most difficult of solution.

If children are at work on problems which are vital to them, we may expect them to continue to work even though they make mistakes. Indeed, the best recitation may be the one

[1] For a full discussion of this point, see Eliot, *Educational Reform*, the essay on "The Function of Education in a Democratic Society."

that leaves the children not with a solution skillfully supplied for them by the teacher, but rather with a keen realization of the problem, and with a somewhat clearer idea of the direction in which the solution may be sought. It is the teacher's work to help the child to see the problem, and, seeing the problem herself from the child's point of view, to stimulate the child to his best effort. The teacher must know not only the pupil's attitude of mind toward the problem and how his mind is most likely to react, but also the mental activity required to master properly the issue that has been raised. On the one hand, the teacher's equipment consists of a knowledge of the minds of the children whom she teaches, and on the other a knowledge of the subject to be taught, not simply as a body of knowledge more or less classified or organized, but as a mode of mental growth.[1] What the teacher needs is a clear realization of the difficulties which the pupils must meet, and the way in which childish minds may best overcome these obstacles. When such sympathy exists between teacher and pupil, we may expect that pupils will constantly grow stronger in their ability to think logically, instead of becoming more and more dependent upon the teacher. And this is our great work as teachers, to render our services unnecessary.

Fourth: No teacher should attempt to outline her work on the basis of the steps indicated in the discussion of the inductive method without a clear realization of the fact that these steps cannot be sharply differentiated, that they are not mutually exclusive. To define a problem adequately may mean that we have passed through the whole process. At any step in the process after the problem is defined, and some hypothesis formed, we may wish to verify our guess by an appeal to known facts, and often we shall find it necessary to abandon the hypothesis already formed and provide another as a basis for

[1] See Dewey, "The Relation of Theory to Practice in the Education of Teachers," *The Third Year Book of the National Society for the Scientific Study of Education.*

further thinking. It is true that the natural movement of the mind is roughly indicated by the steps named; but it must be remembered that no mind can possibly arrive at the solution of a real problem by adhering to a fixed order of procedure. We do not by our teaching create the power of logical thought; we rather guide a mind that naturally operates logically. We can never teach children to reason, but we can provide the occasion for logical thinking, and can guard against the common fallacies. Our success will depend upon a clear realization of the possibilities of the child mind and of the subjects we teach as part of their growth and development.

Teaching by Types: Teaching by means of types is sometimes discussed as a separate method, while in reality it is simply one form of the inductive process. As was indicated in our discussion of observation above, there are times when the consideration of a single situation or object in detail may be worth more than a thousand careless observations. It is especially true that a thoroughly adequate knowledge of one object or case of a class prepares in the best possible way for future observations of members of the same class. Familiarity with the life history of one animal or plant will help us greatly to understand other animals and plants, because that which is most essential in all has been carefully observed in the case considered. Now let us suppose that several plants and animals have been studied. If the cases which are considered are truly typical, it may be possible for the student to appreciate not simply the individuals belonging to the classes studied, but also something of the interrelation of the several classes. This illustration, given because it represents in a general way something of the method followed in the study of science, represents a very common method of procedure in the ordinary affairs of life. None of us can hope to support our conclusions by a careful scrutiny of all possible cases. We take something on authority; namely, that the individual case considered is representative of a large group, then after we have investigated

the one case we apply our conclusions to the whole group. Of course there is one great danger. We may be overhasty in our generalizations. No fallacy is more common than the emphasis placed upon non-essentials by those whose observations have been limited. The stories of the traveler who generalizes, after seeing one red-headed child or after eating at one hotel, concerning the children and hotels of the country visited, are too common to need repetition here. Where observations are necessarily limited, the important consideration is to get cases that seem as different as possible in order that that which is essential may be differentiated from the non-essential or accidental.

Teaching by types in our ordinary school work has been applied most frequently to the subject of geography. Applying the principle stated above, we shall be careful in teaching rivers, mountains, cities, commerce, or any other geographical notion to see to it that the individual cases considered are as widely different as possible. To teach New York City, Philadelphia, and Chicago only would give children a very erroneous idea of the concept "city." They are all exceptionally large, all American, all modern. There are cities smaller, with peculiarities due to age, to location, and to the ideas and resources of the people building them. A better selection would be New York City, London, Tokyo, Venice, Cairo, and Munich. Objection could still very well be offered that this list is too short to include all classes. There can be no doubt that to have taught any city carefully will aid greatly in understanding the notion "city" and in appreciating other cities, but manifestly any final generalization concerning cities must wait until our knowledge of geography has been widely extended. The same conclusion would be reached were any other notion of geography, or any other study, subjected to the same test. There is, however, no harm in forming tentative judgments. Indeed, we must all do this every day of our lives. The main issue is to see to it that there is no mistake as to the tentative

character of the conclusions reached, that the open-minded attitude be preserved.

For Collateral Reading

C. A. and F. M. McMurry, *The Method of the Recitation*, Chapters VI to IX inclusive.

John Dewey, *How We Think*, Chapters XII to XV inclusive.

Exercises.

1. What is the purpose of the step of preparation in the inductive lesson? When would you begin an inductive lesson with a statement of aim or problem? What value is there in having children state the aim of a lesson? When during the lesson should the aim be referred to?

2. How would you hope to have country children get a clear idea of a city? Could you develop this idea with sufficient definiteness by asking questions?

3. What preparation would you think necessary for a class that were taking their first trip to a dairy?

4. What was wrong in the class where, after a trip to the country, a small child said, "A cow is a small animal with four legs that likes to live in the mud and grunt"?

5. Would you allow a boy to perform an experiment in nature study that you knew would result unsatisfactorily?

6. A teacher used the following sentences in her attempt to teach the function of an adjective; criticize the list given.

The red apple is sweet.
The green grass is soft.
The yellow house is large.
The tall man is sick.
The largest horse is fast.

Suggest a better list of sentences for the purpose indicated.

7. In what sense is it true that an induction begins with a generalization? How do you proceed when you modify a generalization which you once held as true?

8. A pupil defined a river as a stream of water flowing through the land. How would you hope to secure a more accurate generalization from him?

9. What is the function of a lecture on Germany to a group of children studying the geography of Europe? Do you think such a lecture

would be as valuable as a lesson in which the pupils are asked to find out why German commerce has developed so rapidly during the past twenty years?

10. Under what conditions would you require children to commit to memory the definitions found in their textbooks?

11. If your pupils were reading Kipling's *Jungle Book*, would you try to make your lessons inductive?

12. What difficulties would you encounter in trying to teach children who live in the Mississippi Valley the meaning of the term *mountain?* How could you hope to overcome these difficulties?

13. The following illustrative problems were used by a teacher who was presenting the subject of percentage to a class for the first time. Can you improve the list?

A man who had $10,000 lost 25 per cent of his money. How much did he lose?

A horse which cost $250 was sold at a loss of 10 per cent. How much did the owner lose?

A house which cost $25,000 was burned. It was insured for 50 per cent of its value. How much did the owner receive from the insurance company?

A suit of clothes which cost the dealer $18 was sold at a gain of 25 per cent. How much did the dealer gain on the suit?

14. Which would be better, to tell a group of children of a trip which you took to a cattle ranch, show them pictures, and possibly read a description of ranch life, or spend the same amount of time questioning these same children in the hope of developing some adequate idea of this type of life? If you follow the first method, could you be sure that children had derived accurate ideas from your description?

15. Write a series of questions which you would use in developing the generalization, "Men who live in cities are dependent upon those who live in the country for the necessities of life."

16. How would you defend the following statement: It is more important that a pupil should have worked out the solution of a singe problem in which he is interested, than that he should have learned, without solving the problems for himself, the answers to a dozen problems from books which he is asked to read.

17. Why do most lessons in which pupils recite from the material assigned in textbooks require little thinking? How can such lessons be made to stimulate thinking?

18. Would you ever allow children to accept an incomplete generalization as a result of their own experience and thought? An incorrect generalization?

CHAPTER VI

THE DEDUCTIVE LESSON

The complete process of thought involves both induction and deduction. Every general principle, unless it is self-evident, must either be arrived at through the process of induction, or be accepted without any attempt at verification. Having formed our generalizations, we use them as a basis for further thinking. If we find that the principle always holds, we are satisfied with its validity. In this testing of the generalization tentatively made, the process of thought is deductive. The fact is that in the process which we designate as induction, deduction enters to verify our inference. In the face of the problem which can be settled only by reference to some established principle, we find ourselves questioning the generalizations formerly accepted, and the process of thought in solving our problem will involve induction as well as deduction. For convenience we treat the problems of teaching under the two heads, the inductive and the deductive lesson, according as one or the other type of thought seems to predominate in reasoning required to solve the problem involved.

Every one thinks deductively who has had sufficient experience to form any generalizations. In the early life of the child we find the psychological basis for deduction in the tendency to act in accordance with ideas. Children define things in terms of their function. Thus a hat is something to wear on the head; a drawer something to pull out and push in; a shovel something to move the sand with; and so for the other objects in the child world. A child makes a dog in clay, draws a picture of a flower, makes a house of his blocks — and in this way tests his ideas. Not all deductive thinking ends in motor

activity; but we can never be satisfied with our deductions until we have established them experimentally. The question concerning our ideas always is, will they work?

Whenever we offer an explanation of our ideas or of our actions, the process of thought is deductive. Not that either adults or children often state the general principle upon which they base their statement or action. We are all only too prone to assume the general principle. The foolish answers which children give may be logical enough. From his very limited experience a boy may have generalized that grass is something to look at and not to be walked on, and that people always live in houses from four to ten stories high, with many families in a house. Now, if such erroneous generalizations have been developed, the way to handle the boy is not to laugh at his deductions from these premises, but rather to require him to state the generalizations upon which he has based his thinking, and to lead him to discover their inadequacy. It matters not what group of children one works with, this same need for a declaration of the principle upon which the argument is based, the generalization which covers the situation under consideration, will be found essential. That teacher does much for the children who frequently pushes them back to a statement of what they assume to be true. This statement is not always easy to make. Even with adults it is very common to explain action by reference to some feeling or attitude which it is assumed has some basis in reason. Some instinctive tendency, or a mode of feeling, thinking, or acting which has become habitual, frequently explains, but fails to justify our actions. The ability to state clearly what one assumes, and to claim as valid only such conclusions as are based on premises which are admitted to be true, is the mark of the man of unusual rationality.

There is no set of rules which a teacher may follow in order to make the children she teaches logically minded. On the other hand, all of her activity tends in some degree to encourage or to eliminate the logical habit of mind. The teacher who

dogmatizes continually in her teaching can do little to overcome a like tendency in the children by conducting exercises logically correct. The wrong emphasis on correctness of the result, instead of correctness of the method employed in getting the result, encourages much illogical work and develops careless habits of thought. And it is just as true that an open-minded attitude on the part of the teacher will be reflected in the children. The teacher who insists upon the verification of generalizations, who asks children frequently to give the ground for the statements which they make, and who encourages reflection, will engender logical habits of thought.

To recognize the wide application of the deductive method in our thinking, one has only to consider what is meant by reflection. It is well also in this connection to remember that the habit of reflection distinguishes the educated from the uneducated man. It is not the number of experiences which makes the difference between men, but rather the use that has been made of those experiences. When we reflect, we think over, organize, and relate our past experiences. Suppose, for example, that some one makes the statement that corporal punishment should be banished from all schools. If you reflect upon such a thesis, you bring to bear your experiences, whether of action, observation, or thought stimulated by reading what some one else has said; and, as a result of your thinking, you consciously or unconsciously assume a general principle under which you feel satisfied that this question of discipline falls; and then you will refer all of your experiences to this principle, testing its validity by seeing whether or not it does uniformly hold. The process of thinking which you have employed is essentially deductive. If stated in the form of a syllogism, it might be expressed somewhat as follows: —

1. Any action which tends to brutalize either pupil or teacher should not be permitted in any school.

2. Corporal punishment tends to brutalize both teacher and pupil.

3. Hence corporal punishment should be banished from all schools.

The process of thought employed has led you to search for a general principle which you accept as true and which offers an explanation of the position which you take in agreeing that corporal punishment should be banished. If you are really reflecting, you will not stop with this reference to a generalization apparently true. Rather you will inquire whether in your experience the infliction of corporal punishment has tended to brutalize you. You will also ask yourself whether this is true of others, and to what degree. You will recall specific cases of punishment of this sort, and will try to decide whether the disadvantages or evil outweighed the good. Only after such careful thought is the process of reflection complete, and it is only then that you can feel satisfied of the soundness of the position which you have taken. It will be noted that the process of thought has been both inductive and deductive.

If children are to learn to reflect, they must have leisure to think over their past experiences. There is danger that in our desire for more knowledge and more activity on the part of our pupils, we may give them little time for reflection. To ask a child to state the significance of what he has done, to encourage him to examine every assumed truth in the light of his experience, and to state somewhat formally the result of his reflection is worth much more than the new experiences which might have been gained in the same length of time. The habit of reflection will be developed only when sufficient time is given for children to stop and take account of the experience which they have had, when respect is accorded the experiences of the individual, and when the teacher requires such work and guides children in the process.

An attempt has been made in the preceding pages to indicate in a general way the significance of the deductive method in our school work. It remains to indicate briefly the method of procedure in the conduct of class exercises which are essentially

deductive in their nature. Such exercises will be found in any subject in which there is developed a body of general principles. For example, the real test of a pupil's knowledge of a principle of arithmetic is found, not in familiarity with the process of induction by which the principle is derived, nor in his ability to apply this principle to the problems given in the book, immediately following the rule, all of which fit the generalization, but rather in his ability, when a miscellaneous list of problems is given, to pick out the principle which applies to this one case. The test of one's knowledge of geography is found not simply in the facts which he knows, but also in his ability to explain phenomena or to anticipate situations by reference to a body of general principles.

The problem: From what has already been said it is clear that in deductive thinking, as well as when the process is inductive, the occasion for thought is found in a problem to be solved. We wish to know why a certain region is arid or what the possibilities of agriculture are in another, and we, therefore, recall our knowledge of the principles of geography in order to solve our problem. A moral situation confronts us ; we need to act ; and in response to this necessity we endeavor to refer the situation to some norm or standard of conduct which we accept as fundamental. The success of our work in securing clear thinking by children will always be conditioned by our success in enabling them to realize the significance of the problem presented for solution.

Finding the generalization or principles which fit the situation to be accounted for or explained is the next step. In order to accomplish this part of the process successfully one must be able to discover that which is essential and to neglect the nonessential in the problem to be solved. Suppose, for example, that the problem is: Why has the greater part of Africa not been settled by civilized men? The factor which is significant is the climate of this region, and it will be of no use for the pupil to recall the size of the continent, the color of its inhabitants, the

fact that Livingstone made a journey across it, except that by eliminating these facts he may be brought to realize that none of them determine the situation, and hence he need no longer pay any attention to them. It is the function of the teacher to suggest to the pupil a number of alternatives and then to guide him in his search for the determining factor. For example, the teacher might ask: Is it because of the savage inhabitants, because of a lack of means of transportation, because the country is overrun by dangerous wild animals, or because of climate? Each of these classes of facts may be known to the pupils, and each in turn may be eliminated as non-determining factors until he comes finally to the last. He must then, provided he decides that climate may determine the availability of a region as a habitation for civilized man, discover under what condition of climate civilized man fails to make advance. He has thus fitted his situation, his problem, to the generalization under which it falls, and has, in fact, taken the next step in the process.

Inference: The inference that the greater part of Africa is not inhabited by civilized men because of adverse climatic conditions is arrived at just as soon as the pupil settles upon climate as the essential factor. Just as in the inductive process we pass immediately from the step of comparison and abstraction to the statement of the generalization, so in the deductive lesson, when once we have related the particular case under consideration to the principle which explains the situation, we are ready to state our inference. There is real value in making such a statement. The further process of verification depends upon a clear and definite statement of the inference; and the best test we have of the completion of the preceding step is the ability which the pupil shows to state his inference.

Verification: When the inference has been made, we have yet to satisfy ourselves concerning the validity of our reasoning by an appeal to known facts. Following the illustration

already used, we should ask ourselves what has happened in the past to civilized men who have gone to Central Africa. We will be satisfied that our reasoning has been correct, only if all of the facts we are able to discover point unmistakably to the conclusion that the climate of the larger part of Africa is unendurable by civilized men.

The element which needs most emphasis in deductive teaching is the realization on the part of the teacher that the success of the process is directly proportional to the independence with which the pupil discovers for himself that which is essential in the situation under consideration, his attempt to fit or relate the particular case to the principle or generalization by which it will be explained, and his willingness, when he discovers his error by an attempted verification, to repeat the process. We do not think logically by having some one else do our thinking for us, nor is our growth measured by the uniformity with which we hit upon the correct solution of the problem at the first attempt. Rather we may measure success by the power of our pupils to criticize the reasoning which appears plausible until carefully scrutinized, and by their readiness to retrace their steps and to search for firmer ground when they have of their own accord given up a scheme of reasoning which has proved invalid.

For Collateral Reading

W. C. Bagley, *The Educative Process*, Chapter XX.
I. E. Miller, *The Psychology of Thinking*, Chapter XVIII.

Exercises.

1. A class is engaged in deriving inductively the generalization that multiplying the numerator of a fraction by any number multiplies the fraction by that number; will there be any occasion for deductive thinking as the work proceeds?

2. A history teacher has tried to develop the generalization that taxation without representation is tyranny. A girl in the class says

that this proves that women should have the right to vote. Analyze the process of thought by which the girl arrived at her conclusion. Was the process essentially inductive or deductive?

3. Some people pride themselves upon the fact that they never change their minds. What comment would you feel justified in making concerning their processes of thought?

4. Why can the leader of a mob influence his followers to most unreasonable action?

5. An eighth-grade boy remarked that he thought that we should forbid all foreigners to come to the United States. How would you lead such a boy to change his point of view by means of his own thought on the subject?

6. A class in grammar was required to commit to memory fifty rules of syntax and later to correct sentences in which the mistakes in syntax were covered by the rules already learned. Could you suggest a better way to teach English syntax?

7. What is the value of the miscellaneous problems given at the end of each section of the arithmetic? A teacher of arithmetic went through one of these lists and had the class indicate opposite each problem the case, or rule, which was involved. Was this a good thing to do?

8. What sort of reasoning is demanded of a class in parsing?

9. Do you consider your teaching of arithmetic, in so far as it involves reasoning, mainly inductive or deductive?

10. In what sense is it true that in deduction we begin with a particular rather than with a generalization? Compare the significance of the problem in induction and deduction.

11. In some textbooks in geometry, the problem is stated, and then the proof is presented step by step with a reference wherever need be to the principles involved in developing the proof; what is the weakness of this sort of an exercise?

12. How can the teacher best help children who are unable to refer a problem in arithmetic to any *one* of the principles which have been learned?

13. Children often make mistakes in reasoning which seem ridiculous to teachers; how can teachers be most helpful in such situations?

14. Do you think it possible to teach children the meaning and significance of reflection? How would you attempt to secure such insight?

15. Why would it be valuable for us many times to write the reasons for our action before carrying into effect our plans?

16. What can you do as a teacher that will stimulate children to do their best thinking? Is it possible that you may actually interfere or discourage them in this part of their work? How?

CHAPTER VII

LESSON FOR APPRECIATION

EDUCATION aims not only to enable one to avoid error, to discover truth, and to equip him with desirable habits, but also to develop the power to appreciate and to enjoy that which is beautiful, whether in literature, painting, sculpture, art, or music. It is not enough that a man be able to make a living; he ought, as a result of his education, to be able to enjoy life. Matthew Arnold's definition of culture, "the acquainting ourselves with the best that has been known and said in the world," embodies much that is essential in modern education. The ability to enjoy a drama of Shakespeare, a picture of Millet, or an opera of Wagner, means the possibility of noble pleasure, of leisure time spent in such a way that inspiration and strength, instead of possible waste, or, even worse, degradation and weakness, result. It is, then, a vital part of our school work to give opportunity for and to encourage in every way possible the development of power of appreciation.

Some of our schoolroom exercises ought to aim primarily to develop power of appreciation in the several fields mentioned above. Not that appreciation can be taught directly, but because there are conditions which are negative in their influence. No one will ever learn to appreciate music or literature or art because some one tells him that he ought and that this is worthy and that unworthy. This sort of teaching will result in hypocrisy and cant. On the other hand, the best guarantee of development along these lines is found in association with those who do genuinely appreciate. It is in this fact that we find our first suggestion for work of this kind.

Do not try to teach any one else to enjoy that which you do not fully appreciate yourself. The fundamental qualification for the teacher is power to appreciate. She must enjoy to the full that which she hopes to make appear beautiful in the eyes of her pupils. It is useless to ask children to enjoy one of Stevenson's child rhymes, if you find yourself unable to enter into the spirit of the poem. Pictures may be hung on the wall and religiously taught; but children will not want to buy good pictures, nor are they apt to frequent the art galleries, unless they have associated with those for whom pictures are a genuine source of pleasure. The best preparation for the teacher who feels that her teaching is inadequate in those phases of her work which involve appreciation is to plan to do what she can to insure her own growth in this particular. Read more poetry, and especially read it with those who derive great pleasure therefrom, if you wish to teach poetry better. If you are familiar with the great musicians, and have through your acquaintance with their work developed some measure of appreciation for this type of expression and for the method by which the musician has been able to build up his wonderful composition, then you may rest assured that your pupils will not find music uninteresting.

The question most frequently asked concerning the teaching of those subjects in which we seek to develop appreciation is whether one must command the technique involved in creation in order to grow in power to enjoy the work of the masters. For example, must one be able to read music in order to appreciate music; must one be able to state the rhetorical excellence of Stevenson's narratives in order to enjoy his stories; is it essential that one fully appreciate the technique of painting in order to get the most out of Corot? In general, the answer is that such knowledge of technique may either help or hinder one in his actual power of appreciation. It will hinder, if the consideration of technique is constantly uppermost in one's mind; it will help in so far as knowledge of technique

gives one the feeling of excellence or perfection of form, provided always that it is this beauty of the product which most engages the attention, and that interest in technique is subsidiary. To express the same idea in another way: if one's knowledge of technique makes him overcritical or oversensitive, he is apt to lose all enjoyment in his concentration upon the technique, in looking for weaknesses, or in his feeling of discomfort because of imperfection. What significance, it may be asked, has this for our teaching? Mainly this, that we must remember that appreciation is in large measure a matter of the emotions, and that any attempt to overintellectualize the process will defeat the end we desire to secure.

There is no other kind of work in which the attitude of the individual at the beginning of the exercise is as important. There is a story told of a teacher who wished to teach a beautiful poem, the burden of which was the beauty of kindness to birds. She began with the birds that the children knew — sparrows. In a short time the children developed the notion, and very justly, that sparrows were a pest, that they had driven away our song birds, and that it would be a good thing to exterminate them. The children were ready to go forth to the slaughter; and then came the poem with its admonition to kindness toward birds. These children would, of course, have been more impressed had this preparatory work been omitted entirely. Very frequently for work of this kind, the very best preparation is found in placing children directly in contact with that which you hope to have them appreciate. Read the poem, play the music, expose the picture to view, and allow them to do their work. Later a somewhat more detailed treatment, possibly involving many repetitions, will give opportunity for increased appreciation.

Children should not be forced to give expression to the feeling awakened. The teacher may accept gladly such expression as comes spontaneously. She may at times ask for a selection of the part most enjoyed. Especially to be avoided are

expressions such as: "Don't you think this beautiful?" "Don't you enjoy this?" and the like. Children under such stimulation are apt to say that they enjoy whether they do or not. They are just as anxious to do the right thing as are some of their elders. To be constantly directed, always told what to admire, means lack of confidence in one's own ability to judge of excellence, or, even worse, the attitude of the hypocrite who admires that which he thinks it fashionable to favor. It is probably safer to judge of the success of work of this kind by the expression on the faces of the children than by the words you may persuade them to use.

In a lesson of this type the teacher does the best work when she acts as interpreter. Success depends not so much upon initiative on the part of the children as upon the ability of the teacher to sympathize with the childish point of view, and to lead them to greater heights by the force of suggestion growing out of her own joy in that which she presents. It is by voice, by gesture, by suggestion, and by explanation,—in all, by providing the most favorable opportunity possible for appreciation, keeping herself as much as possible in the background,—that the teacher makes provision for the development of this power by children.

Much is gained in power of appreciation by giving opportunity for creative work on the part of children. The group of children who have composed a song, and who have labored diligently to make the music which they have written fit the spirit and rhythm of the words, will find a new meaning in the lullaby which they are asked to learn to-morrow. Music will mean so much more than pitch, time, notes of different value, and the like. Through their own attempt they will have realized in the best possible way the fact that the music of the song is intended to express feeling in harmony with the words that they sing. The child who has attempted to draw a landscape will by virtue of that fact grow in power to enjoy the landscape placed on the wall for his enjoyment. And so for any other field in which we seek to develop power of appreciation

tion; to attempt to create for himself will give the child a better understanding of the elements which go to make up excellence, and the contrast between his own effort and that of the master will greatly enhance the value of the latter in his eyes.

Thus far in our discussions of the lesson for appreciation we have interpreted it to mean the development of the æsthetic emotions. There is another sort of appreciation which involves rather more of the intellectual element, but which, so far as teaching method is concerned, may probably be treated to greatest advantage in this same connection. Indeed, there are cases, as in literature, where both elements are involved. In the study of a drama of Shakespeare we are concerned not only with the beauty of expression, but quite as much with the portrayal of the lives of men and women as they have acted and reacted on each other in their common environment. In history we have this drama extended to include a nation or the nations of the world in their relations to each other. In either case we have the record of cause and effect, an account of social experience fundamentally akin to our own. Appreciation here involves the ability to follow the logical relations which are recorded. In proportion as one becomes aware of the motives which have actuated men, the relationships which have existed among them, the organization and outcome of their activities, he has widened his own experience. This possibility of a vicarious extension of the child's social experience is one of the reasons for giving history and literature a place in our school curriculum.

Let us inquire what is involved in securing appreciation of this type. Take, for example, the appreciation of the period just preceding the Civil War. How are we to understand this remote situation? We cannot observe directly; we cannot, as is the case in the solution of a problem in our present experience, gather data by means of observation; nor can we test our conclusions by experiment. Our first great need is to have presented all of the facts possible. We may read the histo-

rian's account, or have it read to us; we may get hold of the newspapers published at that time; read the debates which took place in Congress; peruse the letters of men and women who lived and wrote at that time; make inquiry concerning the number of slaves, and the value of the Southern plantations worked by them; try to find out why slavery had been abolished in the North, and by every means possible familiarize ourselves with what men said and did and the conditions under which they worked at that time. We must have this material made accessible to the children through books or by word of mouth before we ask them to follow the logical relations established among these facts by the historian. Appreciation has its beginning in the abundance of data supplied which makes possible the imagery with which the children are to work, and is consummated when the child has, through his own efforts and by following the development of another, come to understand the play of cause and effect, the organization and relationship existing among these human activities. Work of this sort has in the last step something in common with the inductive lesson, but with this difference, that the children are in the main concerned with appreciation of facts and of the relationships established among them by some one else, presumably the expert historian. It is more a matter of understanding than the discovery of new truth. Of course, there are lessons in history in which the problem is just as distinct as in any science, and where the work can be best described as inductive or deductive reasoning.

And so likewise for literature. The author presents the situation, and draws his conclusions, supposedly true to the logic of human action. The teacher may need to supply details which are missing, may need to guide the children in their attempt to follow the interpretation of the author, but it must be mainly interpretation of facts provided; and presumably, if great literature is studied, the appreciation of the author's interpretation of the human relations is of vastly greater im-

portance than the attempt at interpretation which the children may make.

Appreciation does not mean quiescence, — far from it. Neither does it concern itself primarily with the discovery of new truth or excellence. Rather we aim to understand, and to enjoy, when the æsthetic emotions are involved, the work of the masters. If we can, even in some degree, lead children to think their thoughts, to interpret human activity and human feeling as they have interpreted it, we shall have most signally widened and enriched their experience, and shall have made available for them for all their lives a source of recreation and enjoyment, a storehouse of wisdom, which may constitute their greatest indebtedness to our efforts in their behalf.

For Collateral Reading

E. L. Thorndike, *Principles of Teaching*, Chapter XII.
E. A. Kirkpatrick, *The Fundamentals of Child Study*, Chapter XIII.

Exercises.

1. Why is it worth while to train children to enjoy literature, music, or painting?
2. Do those who look at the pictures in the art gallery which have been specially mentioned in the catalogue or guide book necessarily show any power of appreciation of good pictures? What would be a better test of such power?
3. Why is it essential that you should enjoy a poem which you try to teach to children?
4. What advantage is there in changing the pictures on the walls of the schoolroom from time to time?
5. Is there any good argument for having children write poetry?
6. What could you do to grow in ability to teach art appreciation?
7. Does your technical knowledge of music interfere with your enjoyment of good music?
8. What advantage is there in having children compose the music for a song which they have written?
9. Why is it important that we arrange our poetry, music, and pictures with reference to the seasons?

10. How would you hope to discover whether or not children enjoyed a new picture?

11. Why ask children to choose from among three or four poems the one that they will commit to memory, instead of requiring that they all memorize the same one?

12. What value is there in reading great literature to children without comment?

13. In what way may a good history lesson differ from an inductive lesson in geography?

14. Do you think it essential that children should always have problems to solve in their lessons in literature?

15. Choose a poem which you teach in your grade. Tell what it means to you. What may it mean to the children? Write four questions which you would ask to help bring out meaning which might escape the pupils.

CHAPTER VIII

THE STUDY LESSON

That it is the main business of the teacher to render her services unnecessary cannot be too often reiterated. To be able to reason clearly one's self; to have control of one's habits; in short, to know how to use one's energies to best advantage when the problems of life are encountered, is the greatest benefit to be derived from education. We shall concern ourselves in this discussion with study as it involves controlled thinking, whether inductive or deductive; with the most economical method of making knowledge more available for use by increasing the possibility of recall; and with the possibility of reducing certain knowledge or responses, whether physical or mental, to the basis of habit.

In general, our problem in teaching children to study consists in making them conscious of the best methods to be employed in logical thinking, or in the formation of habits, and then in giving sufficient practice in the use of these methods to make them the habitual manner of reaction, as far as this is possible. It is true, of course, that one who applies the logical method to a question of mathematics or geography may be swayed by prejudice when the question concerns politics or religion; and that the man who knows best how to form desirable habits may be so bound by some other that he will fail to achieve that which he knows to be desirable. Be this as it may, if the school makes the child conscious of the most economical methods of work, the chances for later efficiency are greatly increased.

Strangely enough, what we have been prone to call good

teaching has not always accomplished this desired result. It has too often happened that the direction and help offered by the teacher have tended to make the child dependent, utterly unable to do a piece of work for himself. Even when children have supposedly been required to do much thinking, the teacher has sometimes weakened her work by continually stepping in to propose the next step whenever a critical point has been reached. The argument which proves conclusively that children do not learn to work independently is found in their inability in the upper grades, in the high school, and even in the college to use their time to good advantage.[1]

In teaching children how to study, the first step involves a clear statement of the problem to be solved. The teacher who says "take the next five pages" cannot expect that the children will do anything more, so far as learning how to study is concerned, than waste time in fulfilling her demands. We think hard when we have a problem to solve. If it be true that children need to have an aim clearly in mind when they are at work with the teacher, it is much more essential that they should have clearly in mind the goal toward which they are striving when they work alone. Whenever children are expected to do any work at their seats or at home, the type of assignment becomes a determining factor. It is a mistake to suppose that a minute or two at the end of a recitation will be sufficient to make clear to the pupils the problem involved in the work to be accomplished during the study hour. The best time to make assignments is when, as the subject is developed, a problem arises which cannot then be solved. A good recitation ought to culminate in the statement of the questions yet to be answered quite as much as in a statement of what has been accomplished. If the class has been kept intellectually alert, there ought to be raised by the children

[1] For a discussion of this and other aspects of the problem, see Earhart, *Teaching Children to Study;* McMurry, *How to Study*, and *Teaching How to Study.*

many questions, which may be assigned either to the whole class or to individuals for report at a succeeding recitation.

A very good incentive to study is found in making assignments to individuals or groups for report to the whole class. Even if the problem itself is not of surpassing interest, the desire to contribute one's share to the group project, and the wish to do as well as one's neighbor, will stimulate to greater effort. It would be well if teachers tested their own work and the children's comprehension of the assignments made by asking frequently during the study period for a statement of the problem. To read a book intelligently, to perform an experiment to advantage, children must know what they seek. The attitude which we hope to develop should lead a child to ask, when in doubt, such questions as these: "What am I to try to find out from reading this chapter?" "What am I to look for on the excursion?" "What is the problem which we are now discussing?" "Is the report which has just been made to the point?" "Did John's answer have anything to do with the question we are discussing?" and the like. When children have learned to expect to work toward the accomplishment of some definite result in thought as well as in action, when they hold to the main issue regardless of the allurements of subsidiary problems which should be held for later investigation, when they become critical of the contributions offered by books or by their companions, then, and not until then, have they taken the first step in learning to study.

When children have become conscious of the meaning of the aim or problem as an element in successful study, and when their practice is guided by this consciousness, they will meet with another difficulty in learning how to secure the data adequate for the solution of the problem. Before leaving the elementary school, children should know how to use dictionaries, encyclopedias, gazetteers, year books, and the like. It is passing strange that college students often seem not to know

the purpose either of the table of contents or of the index in the books which they use. It is pitiful to see a person leafing through a book trying to find information on some question at issue, when in a minute he could find in the index just the page or section in which this topic is treated, and so spend the time gathering data instead of wasting it in a random search for the information desired. It is necessary to teach children to consult the indices and tables of contents of books, and to give them frequent practice in work of this kind, if they are commonly to employ this device or method.

Another help to the collection of data might very well begin to be used in the intermediate grades of the elementary school; it is the practice of noting, when more than one book or source of information is used, just where the information is to be found, and something of its nature. If the pupil consults more than one authority, the one read last may raise questions which must be answered by a return to those used earlier, and one ought to be able to turn directly to the sources formerly consulted. Or it may be that a similar problem, or one having much in common with it, will arise a week or a month later, when a record of the sources of information consulted before will lighten the work by half. A record of this sort could be kept in notebooks, or, as is done by older people who know how to work, in a card index. Of course work of this kind presupposes the use of some books other than a single text-book; and to go very far in giving children the command of the technique of study we shall have to provide ourselves with more than a single book for a subject.

Another way by which children can be greatly helped is teaching them how to take notes and how to annotate. There is no exercise more valuable to the student, so far as his future work is concerned, than practice in writing in a very few words the gist of a paragraph or page. As they reflect later, they may want to know the argument of this authority or that, but they must have it in condensed form or they will be little

better off than when they began their work. A very helpful exercise is to have children to abstract, either orally or in writing, a page or two of a book which they are studying, and to compare results. In this work the problem is that which confronts the thinker at every stage of his work, the selection of that which is relevant and the discarding of that which is less significant. If we think logically, among the mass of possible data we must always choose that which in our judgment is relatively most valuable for our purpose. The teacher in the organization of material for presentation in any subject is confronted constantly with the problem of relative values. Not all can be presented, even though relevant to the issue involved; hence, choice must be made. And just so, if the child learns to study, to conduct his own investigations, he must be made conscious of this need of discrimination, and he must be given practice in its exercise.

Adequate study demands not simply that an abundance of data which bear on the problem be secured, but that the validity of the data be brought into question. Children ought not to accept blindly the statements of books or even of the teacher. The one thing which characterizes the student is his search for truth, his attitude of inquiry as opposed to an appeal to authority. It is well for children at times to question the statements found in their books when experience suggests the doubt. It is equally important, of course, that they be willing to acknowledge their mistake, should proof be forthcoming in support of the book. If a child really studies, he must, even as an adult, find statements of fact, the records of observations or experiments, which are at variance with the evidence which he already possesses. It is just in this particular that the student differs from ordinary men who allow others to do their thinking for them. The student may not be able to settle the question, and so forms a judgment which is frankly tentative. Children ought to have the experience of finding that there are some questions to which a definite

answer cannot, in the present state of knowledge, be given. They should be shown, wherever possible, how the conclusions of men on some of the most important problems that have been studied have changed from time to time. They can at times be made to realize the folly of overhasty generalization.

No one has learned how to study who has not been trained to reflect upon his experience, whether the experience has been recently acquired with the express purpose of solving his problem, or is some more remote element in experience which may shed light on the question in hand. A skillful teacher can guide in this process of reflection, and will later tell them what is meant, and demonstrate for them something of the value of the practice. It is quite worth while for a student to know when he has concentrated his attention upon a problem, and just what is meant by reflection. Many older people deceive themselves into thinking that they are exercising themselves in these directions when a slight acquaintance with the elements involved in fixing attention or in reflection might awaken them to the futility of their practices. There need be nothing occult or hard to understand about the practice of study. It is not a matter of terminology nor of a systematic course in psychology, but rather consists in guiding the individual in his practice of the art, and then making known to him the elements in his experience which have meant success or failure. It may be enlightening to compare the emphasis upon careful examination of data, the formation of tentative rather than fixed judgments, the guarding against hasty generalizations, and the emphasis upon reflection with the steps of presentation, of comparison and abstraction, and of generalization in the inductive lesson, and with the corresponding steps of the deductive lesson. The conviction will probably be deepened that when the teacher instructs the student in the art of study she is making available for him the method which she employs in instruction. This must be the relationship; for the teacher

can do nothing more than take account of the way the child learns, and adapt her method to his possibilities.

The habit of verification is one of the most important from the point of view of learning how to study. The questions which the student must constantly ask himself are: "Can the conclusions be applied?" "Do they always hold?" "Does it work?" Fine-spun theories are of little avail, however much satisfaction the originator of them may have found in deriving them. At every step in the progress of his thought the conclusions must be tested by an appeal to known facts. The teacher cannot too frequently insist upon this step as the criterion of the worth of the thinking which has been done. And the insistence will be necessary, for it seems natural for human beings to become so enamored of their theories that they hesitate to expose them to the test which may prove them false.

Teaching children to memorize: Throughout the school life of the child, memorizing is a regular part of his work. If practice alone were necessary, every child should soon learn how to do this kind of work in the most economical manner. The great difficulty is that often neither teacher nor pupil has given any thought to the method employed, their attention having been wholly engrossed with success or failure in achieving the result. It is a well established principle of psychology that the possibility of recall is conditioned by the system of ideas with which that which we wish to recall has been identified. The more associations made, or the more perfect our control of any system of ideas which involves that which we wish to remember, the greater the probability of bringing to mind the fact when we need it. As Professor James puts it: "Of two men with the same outward experience, *the one who thinks over his experiences most*, and weaves them into the most systematic relations with each other, will be the one with the best memory." And along with this fact is another equally important for the teacher: that we may not hope to increase

the native power of retentiveness. The child whom we teach may be endowed by nature with little or much power of this sort, and we cannot change it; but we can improve his method of memorizing.

The first step in memorizing is to understand. If we try to commit to memory the words of a book when we do not fully comprehend the meaning, we are depending very largely on our desultory memory, *i.e.* upon our ability to remember the things because they have been once present in mind; and our efficiency will depend wholly upon our quality of native retentiveness. But, unfortunately, for want of knowledge of a better method, children are frequently satisfied that they are doing adequate work when they are repeating over and over again the words which they have made little attempt to comprehend.

Even when the sense of the words to be memorized is fairly clear, it is uneconomical to employ this method of accretion. The child who studies the poem by saying first the first line, then the second, then the first and second, then the third, then the first, the second, and the third, depends upon mere repetition, not upon thinking, for the persistence of the impression. It has been demonstrated that on the basis of the amount of time required this method is uneconomical. Add to this the fact that after the first complete repetition, later successful recall depends upon the efficiency of the system of associated ideas which have been established; and there can be no doubt of the folly of such a method of procedure. It is no wonder that children who commit to memory in this way forget so readily. They may have understood what they said when they first repeated the poem; but the method they employed almost precludes the building up of a system of associated ideas on the basis of careful thinking.

If the child has read aloud and understands the selection to be memorized, the next thing to be done is to analyze it into its principal thought units; and then each of these large units

of thought may be again carefully scrutinized until a full appreciation of the thought has been accomplished. The thought of the whole may then be stated, using as far as possible the words of the author, and then each of the subdivisions or thought units may be examined in more detail in order to get the shade of meaning that is brought out by this or that word, by relationship of coördination or subordination of clause, or the modification indicated by this word or phrase. It will be necessary, as the work progresses on the large thought units into which the selection has been divided, to return constantly to the whole thought in order to keep clear the relationship of the part to the whole, and to establish the part in the system of ideas which we seek to build up. "All the evidence we have goes to show that the method of memorizing by wholes is most economical." [1] If children were taught to work in this way, there would be little drudgery about memorizing. The careful, thoughtful study once completed, memorization has been accomplished. The energy and attention of the child have not been centered upon a merely technical process, but he has been concerned mainly in trying to appreciate fully the thought that he is to make his own. Memory work of this kind is highly educative, not merely because of the product, but also because of the process employed. Suppose, for example, you wish children to memorize Stevenson's *Bed in Summer:* —

In winter I get up at night
And dress by yellow candle-light.
In summer, quite the other way,
I have to go to bed by day.

I have to go to bed and see
The birds still hopping on the tree,
Or hear the grown-up people's feet
Still going past me in the street.

[1] W. H. Pyle and J. C. Snyder, "The Most Economical Unit for Committing to Memory," *Journal of Educational Psychology*, Vol. II, pp. 133–142.

And does it not seem hard to you,
When all the sky is clear and blue,
And I should like so much to play,
To have to go to bed by day?

You would begin by reading the whole poem, calling to mind the experiences of the children in going to bed before dark on the long summer evenings and of the cold, dark winter mornings when they may have dressed before it was light. The number and the kind of explanations which will need to be made will, of course, depend upon the previous experience of the children and the time of the year. Then the poem might be read again a time or two. After this preliminary work has been done, you might ask some one to tell you the story. Let us suppose that the reply was about as follows: "A little boy had to get up before it was light in the winter, and go to bed before it was dark in the summer. In summer when he went to bed he heard the birds hopping on the trees and the people walking past him in the street. He thought it was hard to have to go to bed when it was still daylight, when he wanted so much to play." If the main facts were less well told, or if there were notable omissions, it would be necessary to get at least an outline of the main thought before proceeding. Now we are ready to call the attention of the children to three main thoughts, each told in a stanza. First, the difference between getting up in winter and going to bed in summer. Second, what did the boy in the story see and hear when he went to bed before dark? Third, how do you feel when you have to go to bed in summer while the sky is still so clear and blue, and you would like so much to play?

It will be very easy to get the thought of the first stanza impressed in the words of the author. It will help to read the whole poem again, the teacher meanwhile asking the children to pay particular attention to the way the author says it. Possibly there will be some difficulty with "quite the other way," but skillful questioning will get the correct form.

And so for the second and third stanzas; if the thought is clear, the words will follow very easily. After each thought has been thus carefully developed, with the whole story always in mind, and the words of the author have been made the vehicle of expressing the thought by the children, it will be advantageous to have the poem repeated several times by individual members of the class. In this repetition the dramatic element should enter as far as possible. To suit the action to the word, to really feel what one recites, helps greatly to strengthen the impression, and thus aids recall.

It may be thought that the illustration used was particularly well adapted to illustrate the theory advanced. Or some teacher may say that children would memorize *Bed in Summer* without teaching. It may, therefore, not be out of place to suggest that the best way to discover for one's self the value of the method is to try it. It will work equally well if the subject is Lincoln's Gettysburg Address, a selection from the Declaration of Independence, the Twenty-third Psalm, or any other masterpiece of English.

The principles to be applied are essentially the same even when verbatim memorization is not required. To get lasting control of the facts of geography or of history, one must have reduced them to a system. There must be a relating of less important facts to more important, a clustering of important points of reference to any other facts which are logically related. This, indeed, is just what scientific organization means, and the main purpose of such organization is to render facts more available, to save labor. The memory is relieved of much of its burden when once we have established the relationship of cause and effect, of equivalence, of similarity, or of analogy among facts. It is this association of ideas on a logical basis which counts most in the possibility of recall.

It is quite possible for children, very early in their school life, to begin to apply these principles and to become conscious of the fact that the way they do their work has an important

bearing upon the ease with which it is accomplished and the permanency of the results gained. The work of the teacher is not done by merely dictating the method, even though that may help greatly to establish right habits of study; our best assurance that the method will be employed when the teacher is not present to direct the work is found in our knowledge that the children not only habitually, but also when a question arises or there is a suggestion of another way, consciously employ the right method.

Teaching children how to form habits: Our next problem is to inquire how children may be led consciously to employ the principles of habit formation when their school work involves work of this type. They can be taught the function of drill or repetition, and can be led to see under what conditions such work will prove most successful. It is not difficult to prove to a boy that his listless, half-hearted work in repeating the spelling of the words he has missed is making little improvement in his ability to spell them. A boy can be led to see by an illustration in which he himself is the chief actor that concentrated attention will make much difference. Let him see how much he can accomplish in ten minutes, and thus get him in the habit of using this means when he finds that he is not working up to his normal capacity. Show him that a new impetus will be given and that attention will be easier if he reverses the order, writes instead of spelling orally, or closes his eyes and attempts to visualize the words. No matter what motive the boy has for the attempt he is making, he will welcome the suggestions which make the task easier.

Later you can teach this same boy the need of verification before drilling himself whenever a question of fact is raised. In the beginning, of course, the doubt or question will be raised by the teacher, and it will be the chief work of the child to find an authority and assure himself that he has the right idea or form before proceeding. A big step in the education of a child has been taken when he is able to say, "I know I am right, because

I have consulted the commonly accepted authority." Occasions will arise constantly in the study of any subject where, instead of asking the teacher or being satisfied with information which is of questionable validity, the child should, as a matter of habit, turn to the authority for verification. It is not at all unusual for children to have misgivings, but they too frequently end by going ahead and ignoring their doubt. To respect one's doubts, to be somewhat critical, is significant for education only when one is led thereby to endeavor to discover the truth. Children will work to advantage when they realize that these steps of doubt, verification, repetition, with undivided attention, are essential to good work.

Children can be taught the necessity of accuracy in practice. Any day's work in a schoolroom will furnish illustrations of the danger of lapses and the necessity of guarding against them. The fallacy of the notion that "this one doesn't count" can be made just as clear to children as to adults. So, too, the mistaken notion that cramming may be substituted for systematic work day in and day out can be brought to the attention of pupils.

It would be a good plan for every teacher to ask herself questions like the following: "What would the children do if I did not carefully direct their work?" "How much better able are they now to work independently than they were at the beginning of the year?" "Can they take a book and find in it the part which bears upon the topic assigned for study, and do they do it with the least possible waste of time and energy?" "Do they know how to memorize; what it means to concentrate their attention; how to reflect?" "Are they more open-minded or more dogmatic on account of the year spent with me?" "Have they established the habit of verification?" "Do they appreciate the method to be employed in habit formation?" To answer these questions honestly will give the teacher some idea of her success as a teacher, for the teacher's goal is realized in proportion as her pupils have

advanced in power to work independently of her guidance or control.

In teaching children how to study, it will be well to devote whole periods to this type of exercise. The teacher will gain much in the progress which her class will make by taking a period frequently during which she studies with the children. By example rather than by precept, by guiding children in correct methods of study and then making them conscious that they have done their work to the best possible advantage, rather than by telling them what to do, she will secure the maximum of results in her endeavor to teach children how to study.

For Collateral Reading

F. M. McMurry, *How to Study.*
Lida B. Earhart, *Teaching Children to Study*, Chapter VIII.

Exercises.

1. What is the relation between a knowledge of the principles of teaching and the attempt to teach children how to study?
2. How would you teach a boy to study his spelling lesson?
3. What exercises would you give your pupils to make them able to use books to the best advantage?
4. State five problems which you have assigned to your pupils which seem to you to have furnished a sufficient motive for study.
5. Which would be better as an assignment for a class in history: "Study the topic of slavery for to-morrow"; or, "Try to find out why slaves were not kept in the Northern states"; or, "Did all of the people in the Northern states believe that slavery should be abolished?"
6. What is the advantage in individual or group assignments? Give a list of such assignments which you have recently given to your class.
7. Why is it necessary in studying to restate the problem under consideration at frequent intervals?
8. When children study, should they try to remember all that they read in their books?
9. Is it wise to have children critical of each other's contributions during a recitation?
10. How could you hope to train children to discriminate between the material of greater and of less importance when they read books to find the answers to their problems?

11. What do you think of the success of a study period where ten problems are given, each independent of the others?

12. How would you expect children to verify the conclusions which they reach in solving their problems in geography, nature study, or arithmetic?

13. Take any poem of from four to ten stanzas, and have your pupils commit it to memory as a whole by reading it over and discussing the thought as often as may be necessary. Take another poem of equal length and of equal difficulty, according to your judgment, and have them commit it to memory line by line and stanza by stanza. (A good plan would be to take four stanzas for each test from the same long poem.) Three weeks after each selection is learned, without suggesting to the pupils that the selection is to be called for again, find out what part of each selection can be recalled.

14. How could you teach your pupils that the repetitions which count when studying a spelling lesson are the ones which are made with attention concentrated upon the work in hand?

15. Is a study period in the schoolroom properly regarded as a rest period for teachers and pupils?

16. Are the children you teach better able to get along without a teacher than they were when they came to you? What evidence can you give to show that they can work independently?

CHAPTER IX

REVIEW OR EXAMINATION LESSON

The review or the examination, in so far as methods of teaching are concerned, present the same problem. We seek by means of exercises of this type to bring about a better organization of knowledge, to test the efficiency of our work by finding out whether or not pupils can, when put to the test, utilize the knowledge or habits which we have labored to make available for them, whether they are actuated by the ideals and purposes which we have sought to inculcate, whether they do actually employ the most economical methods of work when they meet a situation which challenges their strength. It will be recognized at once that work of this sort is a part of every recitation. But for our own satisfaction, and, possibly, in order to meet the requirements which may be imposed by those higher in authority, we may at times feel the need for a stated exercise of this sort.

A review should mean a new view, a placing of facts in their true relationship. It should mean a clearer view of the topic or the subject which the children have been studying. It avails little to go over the ground that has already been covered more rapidly. The purpose to be accomplished is not to fix in mind a series of unrelated facts. In our discussion of memory we had occasion to call attention to the fact that recall of past experiences was conditioned by the number and the quality of the associations which had been established. And it is not simply a matter of recall. The use that we can make of a fact depends upon our ability to relate it logically to other facts. It is quite possible that a man of great native reten-

tiveness might be able to recall thousands of facts, and yet be stupid, utterly unable to do the thinking required for effective action. To bring about such an organization of ideas demands that from day to day the new facts or principles that are learned be consciously related to the old. It will not be economical to put off all reviewing until the end of the month, or quarter, or term. The step taken in advance to-day can be properly appreciated only when it is seen in relation to that which has gone before; and the work of the past week or month will, in turn, by this additional effort be seen in truer perspective.

There are, however, convenient units into which subjects naturally divide themselves; and when one of these units has been completed, it may be well to take a period or two for the express purpose of review. We may then clear up any misconceptions, give a chance for additional verification and application of the knowledge thus far gained. It cannot be too strongly emphasized that the review which really counts is one in which the teacher works with the children, guides them and instructs them, rather than sits in judgment over them. There is nothing more disastrous to the best type of work than the idea on the part of children that the review lesson is the teacher's opportunity to ask catch questions, or to overemphasize unimportant details. Children respond very quickly in such a situation by their endeavor to cram, with little or no effort at organization, all of the facts that they have been taught.

A convenient stimulus to the proper sort of review is found in the requirement that pupils prepare an abstract or topical outline of the ground which has been covered, and submit it, preferably from memory, for class criticism and discussion. If the teacher asks questions, she should be very careful to see that they are questions of large scope which demand organization, or still better the application of organized knowledge. This brings us to the problem of testing.

The only adequate test of school education, as of all other

education, is action. The nearer we can in our tests reproduce the conditions which will confront the child in actual life, the better. Not that we can always have him actually present in the situation; but when that is impossible, we can present for his consideration ideal situations which correspond to those which he will later find. The possibilities of presenting precisely the test which he will meet and is meeting in life are, I believe, much greater than most examiners suspect. We have discovered after many years that the best test of a child's ability to spell in the only situation in which he will ever need to spell is to test him in that situation; *i.e.* by judging his ability in writing words in connected discourse. The way to discover whether one can speak or write grammatically is to listen to him speaking or reading what he has written, and not to ask him to recite rules of grammar. The only real test of a child's ability to give adequate oral expression to the story or poem is to see whether or not he can make clear the thought and furnish enjoyment to others, preferably to those who have not before heard the selection which he reads. We can assure ourselves that we have awakened an interest in literature and history, when we know that children read good books other than those which we compel them to read. The success of manual work, the time spent in art or music, ought certainly to be measured by ability to make and to decorate, the singing of songs, and the desire to hear music, or to see pictures. The more occasions that can be found for the application of the arithmetic we teach in actual measurements and computations which have real significance to children, the better will children understand their work, and the more certain we can be of their future efficiency.[1] It is coming to be a recognized principle of nature study that the common things, the animals and plants which are significant for our living, are the ones which should

[1] D. E. Smith and F. M. McMurry, "Mathematics in the Elementary School," *Teachers College Record*, Vol. IV, No. 2; D. E. Smith, "The Teaching of Arithmetic," *Teachers College Record*, Vol. X, No. 1.

engage our attention; and we expect that children will, on account of the teaching, enjoy more, take better care of, and utilize to better advantage the plant and animal life with which they come in contact. Even in such subjects as history and geography, one can hope to find just such applications while the child is studying as are apt to occur in his later life. The presentation of the results of the study of a country to a school assembly with the aid of pictures and a lantern, or the interpretation of current events in the light of their geographic setting will afford no mean test of the children's knowledge of geography. The comparison of to-day's happenings in the light of the events of a decade or a century ago; the explanation of the historical reference in the period devoted to literature; the writing and presentation of a historical drama, will afford as great application of one's knowledge as most of us ever make.

Work of the sort indicated above will not only serve to test the value of the work that children have done, but will also add greatly to the interest and enthusiasm with which children do their work. We can scarcely hope that all examinations will satisfy this ideal; but of this we can be sure, the more work of this kind we do with our pupils, the firmer will be their grasp upon their work and the greater is apt to be their power to satisfy even less adequate tests.

Examinations have another function which we as teachers should not overlook. Any adequate test of children's abilities is also a test of our teaching. It will probably not be best for us to try to defend ourselves by pleading the inadequacy of the test, nor the backwardness of the pupils when they come to us, nor their parentage, nor any other less common reason. If children do not write as well as they should, if they misspell words they commonly use in their written work, if they cannot tell the story, recite the poem, solve the problem, describe the geographical area, or relate the events of the historic period, we had better inquire whether we have helped them

to work to best advantage, whether we have clearly differentiated the several aspects of our work and have then applied the methods suitable to accomplish the desired result. There may be mistakes made, but, all things else being equal, the teacher who gets results is the best teacher.

We shall do better work, children, teachers, and supervisors, when we have provided for our use more definite standards or scales by which to measure our results. There is no reason why we should not have a scale which would enable us to tell with a fair degree of accuracy just what the standing of this group of children is in writing, in ability to perform the fundamental operations in arithmetic, in spelling, in writing compositions, in discussing the geography of North America, in decorating a cover for a notebook, or in any other subject or aspect of their school work. Beginnings have been made in this direction, and we may hope for more as time passes.[1] As these units of measure are perfected and applied in examining the results of school work, we will, of course, hear the cry of those who will tell us that the best things that a teacher does cannot be measured. The obvious reply will be that efficiency in accomplishing results which can be measured need not in any way prevent a teacher from exercising that influence or doing that sort of work which is not recorded on examination sheets. Rather it will be found, I venture, that the efficient teachers, as measured by the results which we can test, are, on the whole, the teachers that are doing the noblest work. Strength of personality, appreciation of child nature, a life which by its example makes for truth and beauty in other lives, are qualities not uncommon in the teacher who is glad to be judged by the results which pupils can demonstrate.

[1] E. L. Thorndike, "Handwriting," *Teachers College Record*, Vol. XI, No. 2; Stone, *Arithmetical Abilities and Some of the Factors Determining them.*

For Collateral Reading

W. C. Bagley, *The Educative Process*, Chapter XXII.
W. W. Charters, *Methods of Teaching*, Chapter XI.

Exercises.

1. What is the purpose of an examination?
2. Would you be willing, in a review of a large topic in history, to demand fewer details than in the original study of the topic?
3. What is the value of an outline prepared by pupils as a part of their review work?
4. Which is the better test of a boy's ability in English, a high mark in an examination in grammar, or a well written story of a fishing trip written for a school paper?
5. Prepare a series of questions which you think might be used to advantage in the examination of a class that has been studying the geography of Europe.
6. Give as many illustrations as you can of the application of the knowledge gained in school to situations in which the pupils use their information or skill to satisfy needs comparable to those which one meets in everyday life.
7. What is meant by saying that a review should mean a new view?
8. Do children commonly fail in examinations when they have been well taught?
9. Should children be promoted solely upon the marks made in examinations?
10. A boy's average in an examination was 67 per cent. An examination of the marks he received showed the following results: geography 80 per cent, history 100 per cent, composition 80 per cent, spelling 70 per cent, arithmetic 40 per cent, grammar 40 per cent, and drawing 60 per cent. The passing mark was 70 per cent; would you have promoted the boy?
11. How often should reviews be conducted?
12. Should children be notified in advance that examinations will be held on certain days or weeks of the term?

CHAPTER X

THE RECITATION LESSON

The recitation lesson as commonly conducted consists in having children tell what they have read in their textbooks. Sometimes the teacher accepts or even demands that the pupils recite by repeating the words of the book. Better teaching requires rather that they render the thought of the author in their own language. In this chapter we shall discuss some of the worthy ends which may be accomplished by such an exercise, some of the common deficiencies in work of this type, and the modifications which are advisable in the light of the principles already enunciated.

The recitation lesson commonly tests the pupil's memory for facts. The questions asked and answered serve to reveal to the teacher the knowledge or lack of it on the part of the pupil. In a way this testing also gives the teacher some idea of the amount of work done by the pupil. The great weakness of work of this kind is found in the tendency to demand and to accept words, the rehearsing of facts unrelated and unorganized. Of course this need not be true, since it is entirely within the power of the teacher to frame her questions in such a way that the pupil's grasp on the whole topic rather than his memory for isolated facts is tested.

The recitation which tests the pupil's ability to present in orderly fashion the substance of the thought found in the sections assigned in the book for study is of genuine value. The topical recitation affords an opportunity to develop on the part of children the ability to stand on their feet and speak to a question for some minutes. And it may be suggested in this connection that we should develop more power of this sort

than is commonly found in our schools. The ability to express one's self adequately on the topic under consideration will always make for effectiveness in social life. It would be well to test the progress of our pupils from grade to grade by their ability to speak more effectively and for a longer period as they advance through the school, on some topic connected with their school work.

When pupils are required not simply to recite on some topic which is presented for their consideration, but are required to furnish their own outline and to recite on the basis of their own organization of the selections which they have read, the recitation may become a valuable exercise in thinking. The success of work of this kind will depend upon the definiteness with which the problem or aim of the work has been provided. It will not require much thought simply to follow the paragraph headings or marginal notes of the author and to present the organization as a basis for recitation. If, however, a problem has been suggested the solution of which may be found in the pages assigned for study, then the recitation may test the pupil's power to analyze and organize the material which the book provides. And this is the only test of a thorough mastery of the book. We do not read to find out everything that an author says. Our needs may demand a very different ordering of facts, we may use facts in entirely new relations, and may ignore much that was essential from a different point of view. Children have read their textbooks thoroughly when they have derived from these texts the facts or ideas which are essential in the solution of their problem, the satisfaction of the aim which they hope to realize.

This ability to use to best advantage a book is a very valuable accomplishment. When the recitation lesson accomplishes this result, it justifies its use. Too frequently we find adults who seem to feel that they must try to gather all of the knowledge and must try to follow none other than the author's point of view in their reading. These persons read one book,

and, as a result, believe one theory. It seems not to disturb them greatly that the next book they read takes the opposite point of view and that they range themselves on that side of the question. Books are, or at least ought to be, our servants, not our masters, and in the handling of books in his regular school work the child ought to come to realize their true function. There is no greater proof of a lack of thought than the ready acceptance of whatever one finds in print.

There is great danger in the use of textbooks that children and teachers will become satisfied with words, that they will come to think that the repetition of the formula of the textbook is proof of knowledge. Textbooks are all too often merely books of texts. They have been made frequently enough by those who possess a very wide knowledge of the field in which they write; and by some strange process of thought they have apparently reached the conclusion that the way to make a subject simple is to condense it. Many of our most used textbooks are merely summaries or outlines of the subject treated. They lack richness of detail, and state conclusions instead of furnishing a large number of experiences, from which one may, through processes of logical thought, derive the generalizations of the subject. Take, for example, most of the textbooks in history for elementary schools, and read carefully upon any topic selected at random, and then ask yourself just what these *words* mean to twelve-year-old children; or, better still, ask these children who repeat so glibly the words or reproduce the statements of the book just what they mean by the words they use. Try to discover whether they have any adequate knowledge of facts, or any command of images, which would make possible the generalizations which they give as a result of the process of thought. Remember that a textbook is not logical for children because it has been logically arranged by the scholar. The test is rather to be found in the pupil's ability to reproduce in his own thinking the steps which have made possible the conclusions of the author.

Any wide-awake teacher can make her work more interesting and more significant for children, if she will carefully provide for the enrichment of the text. The sources from which data can be gathered, regardless of the subject under consideration, are almost without number. Especially to be recommended are the standard works in the subjects. It will be interesting to discover that children would rather read Parkman than to study the text in which some less competent person has endeavored to tell his story in a few paragraphs which mean absolutely nothing to the child. The magazines which publish articles of wide social interest will furnish much helpful material. There is no school that may not greatly enrich its work by an appeal to the actual experiences of the children and by carefully directed observations and experiments. We need our textbooks as a summary, as a convenient condensed outline, or as books of reference; but we must provide as best we can other books of reference which will furnish the details which are impossible in the limited number of pages allowed to the text. In every room of every school a library of books, pamphlets, magazine articles, and illustrative material should be found, and every teacher should expect to increase this collection and to improve its quality as the years go by.

It will give new meaning to notebooks and note-taking, if both teacher and children realize that the books thus prepared are a real addition to the texts used. A comparison of the work done by different members of the class will add interest in the work. One of the greatest deficiencies of the recitation lesson is the danger that nothing new will be presented. It is not intellectually stimulating to listen to others who repeat simply the thought with which you are already familiar. Where good notebook work is done and reported upon, the chance for new ideas, the stimulus to thought, through the presentation of new material, will greatly strengthen the work.

A tendency in work of this type to accept vague and in-

definite answers is another argument against the recitation lesson which consists merely in rehearsing the words of the book. Statements are apt to be vague when ideas are vague, and we may not expect ideas to be very clear when the child lacks experience. The child's power of expression, aside from the difference in original talent in this direction, is conditioned first of all by his acquaintance with things and processes. The recitation lesson, as it is ordinarily conducted, gives little opportunity for this sort of firsthand knowledge. To work at the sand table, to construct with wood, clay, paper, or yarn, to experiment, and to observe carefully the working of nature may mean more for the command of language than much more time devoted to so-called language lessons. But the effective use of such experience for language growth depends in a measure upon the requirement that the teacher makes for adequate expression. The teacher who accepts the vague and indefinite answer encourages slovenly habits of expression and incidentally slovenly habits of thought. It is usually a mistake to say to a child: "I know what you mean even though you have not said it." Children are often lazy enough to allow the teacher to do their thinking for them, if the teacher willingly accepts the burden. Thinking is necessary for expression; language is the tool of thought; we can do no greater service to children than to hold them for what they say, give them credit for the thought which they express and no more. Words for children, as well as for adults, are used to conceal ignorance as well as to reveal thought. A child is quick to take advantage of the teacher who will accept any sort of an answer and interpret it as a statement containing thought. Indeed, it is possible that a child may even come to think that his incoherent statements, his word juggling, really represent thought.

Another danger in the recitation lesson is found in the tendency to develop the purely individualistic attitude. If excellence consists in endeavoring to repeat more of the book

statement than any one else, manifestly it is your advantage to hinder rather than to help others in their work. The attitude of excessive competition on the one hand, and of indifference on the other, are both avoided when children work together for common ends. The standard of the school should be coöperation and helpfulness.

The recitation lesson in its least desirable aspects will not disappear until all of our teachers realize that teaching does not consist in hearing lessons. The broader the training of the teacher, the better her understanding of child nature and of the meaning of education, the less likely is she to resort to this method to any considerable degree. We shall, it is true, so long as we use textbooks, take occasion to discover what use children have made of them ; but this testing will be incidental to our teaching, and not the sum and substance of it.

For Collateral Reading

W. C. Bagley, *The Educative Process*, Chapter XXII.

Exercises.

1. Why is a recitation in which the teacher asks fifty questions which test the pupil's knowledge of the facts recorded in the book not particularly valuable?
2. Why ask pupils to recite by topics rather than ask questions which will bring out the facts concerning each topic treated in the book?
3. Discuss the use of the textbook in teaching from the point of view of both teacher and pupil.
4. When have you read a book thoroughly? Ought we ever to try to remember all that the book tells?
5. It is essential in a democracy that people think for themselves; how would you develop this independent attitude in children?
6. When children say that they know but cannot tell, how well do they know; how clearly have they thought?
7. If a pupil recites the words of the book, does he know the subject? How would you test further the extent of his knowledge?
8. Find examples in some textbook which you use of statements which mean little to children who use the books.

9. How would you plan to supplement the textbooks which you use? Give examples?

10. Why do children show a lack of interest in recitations where the teacher tests the class on their knowledge of the facts recorded in the text? How can the situation be improved?

11. Why is it generally a mistake to interpret to the class the answers given by the pupil reciting?

12. Under what conditions is it better to have books open in class than to test pupils on their knowledge of the facts recorded in the text?

13. If a pupil reproduces accurately a line of reasoning recorded in his book, has he necessarily thought through the situation for himself?

14. What do the following paragraphs mean to a class of pupils from twelve to fourteen years of age? Have they definite images? Do they fully understand what the author means?

"*The Puritans.* — The New England colonies were founded by English Puritans who left England because they could not do as they wished in the home land. All Puritans were agreed in wishing for a freer government than they had had in England under the Stuart kings, and in state matters were really the liberals of their time. In religious matters, however, they were not all of one mind. Some of them wished to make only a few changes in the church. These were called Non-Conformists. Others wished to make so many changes in religion that they could not stay in the English State Church. These were called Separatists. The settlers of Plymouth were Separatists; the settlers of Boston and neighboring towns were Non-Conformists."

"Unlike the poor humble Pilgrims were the founders of Massachusetts. They were men of wealth and social position, as, for instance, John Winthrop and Sir Richard Saltonstall. They left comfortable homes in England to found a Puritan state in America. They got a tract of land extending from the Merrimac to the Charles, and westward across the continent. Hundreds of colonists came over in the year 1629–1630. They settled Boston, Salem, and neighboring towns. In the next ten years thousands more joined them. From the beginning Massachusetts was strong and prosperous. Among so many people there were some who did not get on well with the rulers of the colony."[1]

Professon Johnson asks, "Do the children see or feel anything but words? Do they see Puritans? Do they see anything that the Puritans might change or any reason for changing it? Do they see anything that happened in America? . . . But what do the words actually tell about the circumstances of the Puritans? . . . Can any one think that such statements really convey information about the Puritans to one who is being introduced to them for the first time?"[2]

[1] Quoted by Johnson in a monograph on "The Problem of Adapting History to Children in the Elementary School," *Teachers College Record*, Vol. IX, p. 319.

[2] *Teachers College Record*, Vol. IX, pp. 319–320.

CHAPTER XI

QUESTIONING

In all teaching much depends upon the skill with which the teacher stimulates and guides the class by means of the questions which she asks. Occasionally one finds a teacher who seems to think that the sole purpose of questioning is to test the knowledge of her pupils. She asks hundreds of questions which can be answered merely by an appeal to the memory. This sort of testing is valuable for review, but it does not necessitate thought. When a teacher habitually asks these fact questions, the children respond by trying to remember the words or the facts given in their books.

A type of question still less worthy is the direct question, — the one that can be answered by yes or no. The teacher who asks, "Is Albany on the Hudson River?" does not expect the children to think. If they are fairly bright, they will probably guess from her inflection whether the answer is yes or no. In any event, after one guess has been made there is only one alternative, and the pupil who answers second often deceives both the teacher and himself into thinking that he really knew the answer. The question which suggests an alternative is in effect the same as a direct question with its alternative answer of yes and no. "Does the earth turn on its axis from east to west or from west to east?" is no better than to ask, "Does the earth turn on its axis from west to east?" Indeed, the alternative question in the example given is worse than the direct form, since it suggests a wrong answer which may make sufficient impression to confuse the pupils when the question arises again.

The leading or suggestive question is much used by teachers who attempt to develop with children generalizations for which they have no basis in knowledge. It is perfectly possible to have children give some sort of expression to the most profound generalizations of science or philosophy, if one is only skillful in suggesting the answers which they are to give. As an example of this sort of questioning, the following is taken almost verbatim from a teacher who thought she was having her children think about the growth of plants. "Did you plant your flowers where the sun would shine on them? Do you think plants would grow in a very dark place? What do plants need to help them to grow? When the ground gets dry, what will you sprinkle on the ground to help the plants to grow? What do plants need besides light to make them grow? Would your plants grow if it was very cold? What do plants need besides light and moisture to make them grow?" If such a series of suggestive questions is asked, the responses will be prompt and the waving of hands most vigorous, but surely there has been very little necessity for thinking on the part of the children. This brings us to the crux of the whole problem. A question in order to be most stimulating must be of sufficient scope to demand that the experience of the children be organized anew with reference to the problem under consideration.

The teacher who wants to test the quality of her questions ought frequently to ask herself whether her questions are of sufficient scope. If all the children can answer every question asked immediately, the questions have not been very successful from the standpoint of provoking thought. It takes time to think. The question of large scope will be followed, not by a wild waving of hands, but rather by a period of quiet reflection. The teacher who was trying to have her pupils think about the conditions of plant growth should have asked one or two thought-provoking questions instead of the larger number of suggestive questions. She might have put the fol-

lowing questions: What have you known any one to do to get good, strong, healthy plants? Would it be possible to change any of these conditions and still have the best plants? What is necessary for the growth of plants? If questions similar to the above are asked, one might naturally expect children to relate and to compare experiences, in fact, to solve the problem by bringing to bear as best they could the facts concerning plant growth which had been observed in their experience. If the teacher wants the children to get some adequate idea of a mountain, in their work in home geography she might tell them about it or read them a description; but even after the best description she would want to question them in order to have them think about the facts which had been given. She might ask: How long do you think it would take a man to walk to the top of a mountain? What would be the difficulties in getting to the top? If you stood on the top and threw a stone, how far down the mountain do you think it would go?

To ask good questions takes careful thought and planning on the part of the teacher. A half dozen thoroughly good questions often make a recitation a most stimulating exercise in thinking, while the absence of this preparation on the part of the teacher not infrequently results in the ordinary listless class period, which may actually be harmful from the standpoint of the child's intellectual growth. It would be well for every teacher to ask herself the following questions when she is dissatisfied with the results of her teaching: Were my questions clear and concise? Did they challenge the attention of all the members of the class? Did the children need to think, to organize their experience with reference to the problem in hand before they answered? Was the sequence good? Was it possible for every child to answer some of the questions? Did each child have a chance to answer? Did the children ask questions?—When children are active mentally, they will have questions to ask.

In asking questions much depends upon the novelty of the

form in which the question is put or of the issue which is presented. The writer has enjoyed asking several groups of teachers why they teach. The answers have been most varied, and on the whole indicate the real attitude of these men and women toward their work. A very different response is secured, however, when you ask the same groups to define the aim of education. They will all profess that they hope to realize the aim of education in their teaching, and that it is because they hope to participate in the development of socially efficient men and women that they teach; always provided you have asked a question concerning the aim of education. The difference in the two situations is accounted for by the difference in the wording of the question. In the one case these teachers really asked themselves the question — why do I teach? They answered in terms of their experience. Some taught for money, some because it was a respectable calling, some for want of anything better to do, some because they liked children, and some because of their appreciation of the significance of education in our modern democratic society. In the other case, the answers were given in words conveying ideas which were supposed to be those most acceptable to the teacher.

It is often helpful to state the opposite of the common expression of a generalization and to suggest that you are willing to maintain this point of view. The best lesson that the writer ever conducted on induction and deduction was begun with the statement: "Induction always begins with a generalization and moves to the consideration of particulars. Deduction always begins with a particular and moves to a generalization." The class was excited because the usual form of expression had been reversed, and, before the period was over, did some thinking about the commonly accepted definitions of induction and deduction. These definitions had really been nothing but a lot of words to juggle with, rather than the embodiment of clear ideas. This method of shock through the unfamiliar form of the question, or by means of a statement which challenges

attention because it is seemingly contrary to the accepted formula, is one of the surest means available to the teacher who would stimulate thought.

It may be objected by some teacher that the form of question indicated above gives little or no place to the necessary reciting from books; that when one wants to discover whether the pupils have studied carefully the content of a text, the one way to be sure is to ask the fact question. In reply, it may be said that questions which call for the use or organization of facts demand not only the knowledge demanded by the fact question, but the more significant use of these data. It is true that some teachers still hear lessons. On the whole, there is too much telling of what the book says and too little teaching. The skillful teacher, in the assignment of her lesson, will give the children problems concerning which they can find information in their books. The recitation will demand the answer to the questions that have been put previously, as well as to such other questions as may be necessary in the development of these problems. If the book is to be given a larger place, the recitation may be topical. Here, again, the large topics which are assigned should demand not a repetition of the headings and paragraphs of the book, but rather the outline furnished by the teacher, or, better still, made by the class; should necessitate a reorganization of the material of the text. There is little use in trying to furnish children with the knowledge of an encyclopedia. They will forget all except that which has become part of a system or scheme of ideas which have meaning and significance because of their organization. It is true that facts are the raw material of thinking, and it is equally true that those facts which have had some place in our thinking are the ones which we retain for future use.

Aside from the form of the question, the teacher must consider the technique of questioning. One of the most common mistakes is to call on the bright children almost to the exclusion of the less capable. The writer has repeatedly followed closely

the distribution of questions among the members of a class, only to discover that often from one fourth to two thirds of the class were not called upon at all, and that generally three fourths or more of the questions were addressed to a very small number of children. Most teachers would find it interesting to keep a record for a few days of the number of questions assigned to each child. Such a score would help to explain the lack of interest and backwardness of some pupils.

One hesitates to suggest that questions should not be given to the pupils in any regular order from the beginning to the end of the class by rows of seats or otherwise. Of course the teacher who does this notifies the members of the class that they need not be troubled about the work until their turn comes. Almost as bad, from the standpoint of maintaining the feeling of responsibility by the whole class, is the method of asking questions which prefixes the question with the name of the child who is to answer. When the teacher says, "George, will you summarize the points which have just been made," John, Henry, Mary, Catherine, and all the rest realize that there is nothing for them to do. The teacher should rather announce her question, and then wait long enough for all to be active before calling on any one.

Another source of lack of attention is found in the question which is repeated. Children soon come to know whether they must listen when the question is first put, or whether they may wait until the second or third statement before they will be called upon. There is another weakness often shown in repeating questions, viz.: the question is varied in form, which, in some cases, leads to confusion in the minds of attentive pupils, or the different forms used enable the child to guess the answer which is desired. To repeat questions is to acknowledge either that the form in which it was first put was not good or that the children were not expected to attend to the first statement of the problem. Either alternative will be avoided by a thoughtful, well prepared teacher.

The besetting sin of most teachers is the practice of repeating the answers given by children. If the recitation is a place where children are to discuss their problems together, then every answer should be addressed to the whole class, not to the teacher. The teacher who repeats each answer cannot expect the children either to recite to the class or to pay attention to the one who is speaking. Here is another chance for an interesting experiment. Score one every time you repeat an answer, and then try to see how soon you can eliminate this bad habit. It is often helpful to stand or sit in some part of the room not directly in front of the class. The fact that the teacher is among the class, one of them at least in position in the room, will make it somewhat easier for children to talk to the whole group. This habit of repeating the answer really grows out of the feeling which so many teachers have that the function of questions is to test for facts, and that in the recitation the answer should be addressed to the teacher and given by her to the class so that all may be made aware of the correct answer. The position which has been maintained is that the main purpose of questioning is to stimulate thought. Even if questions were mainly useful as a means of testing for facts, it would still be unwise to repeat the answers.

Questioning by the teacher which does not lead to the asking of questions by pupils is unsatisfactory. If the children are thinking, really trying to solve the problem at issue, they will have questions of their own. If any single test were to be applied to the strength of the teacher's questions, this would probably be best. Needless to say, the questions which children ask should, as a rule, be addressed to the class, or to some one member of the class, and not to the teacher. Some of the best lessons are those which end with children's questions still unanswered, these problems furnishing the point of departure for the study which is to precede the next day's work.

If any one thinks that questioning is a simple matter, one that deserves less consideration than has been given to it, let

him sit down and write four or five good questions which might be used in teaching a first-grade lesson on the dog; a fifth-grade lesson on the Southern states; a seventh-grade lesson on making jelly; or a high school class on the law of gravity. The teacher who will get some one to write down for her the questions which she asks in a single recitation will be surprised both at the number (it will be almost unbelievably large) and the quality of the product.

There is nothing more searching than to attempt to write down beforehand the half dozen or more pivotal questions which are to be used in a recitation. When the attempt is made, any weakness in knowledge, in organization of subject matter, or in appreciation of the pupil's point of view with relation to the material to be presented, will become apparent. There is no one thing that a teacher can do which will bring a greater reward in increased teaching power, than systematically to prepare questions for one or more recitations each day. If the writer could be sure that any group of teachers would try conscientiously to improve in the art of questioning, he would be just as sure that these same teachers would be rated by any impartial critic as superior to those who are willing to trust to inspiration in this most important part of the teacher's work.

For Collateral Reading

J. A. H. Keith, *Elementary Education*, Chapter IX.

Exercises.

1. What is the chief function of questioning?
2. Why is the direct question of little value in teaching?
3. Give examples of leading questions. Why should a teacher avoid questions of this class?
4. Write the questions which you would ask a class who had read a description of a glacier, in order to stimulate their thought and test their knowledge of this topic.
5. How many questions did you ask during one hour's work? Observe some other teacher, and score the number of questions.

6. Why is it important to consider the form or the wording of the question you ask?

7. How can you challenge the attention of every member of your class by the questions which you ask?

8. Why is it poor method to repeat the answer given by one of the pupils?

9. Do your pupils recite to you, or to the class?

10. When would you expect children to ask questions? To whom should such questions be addressed?

11. Criticize the questions used by the teacher in the following stenographic report of a high school recitation in English. A lesson on the old ballads has been given before. The text used was Seward, *Narrative and Lyric Poems*, pp. 20–35.

Teacher: Before we begin to talk about modern ballads, let's see what you got from your first impression of the old ballads last time. In the first place, give four or five subjects that the old ballad writers were especially interested in.

Pupil: Fighting, principally, and some romance.

Teacher: What do you mean by *romance?*

Pupil: Romance — that is all.

Teacher: People meant different things — fighting, or love — do you mean *love?*

Pupil: No, fighting — romance. (*Teacher writes on board* "romance.") That is about all I know, in the first — old ballads; oh, yes, one gruesome one, about c—.

Teacher: Corbies?

Pupil: Yes.

Teacher: Horror, perhaps.

Pupil: Yes.

Teacher: Elsworth?

Elsworth: It only happened once, — lovers separated and met again.

Teacher: Yes. (*Writes* "Fighting, Tales of Horror, Shipwreck, Parted Lovers.") Is that a fair list? I should think so. Let us see about the spirit in which they were written, that is, the kind of qualities the people in those ballads showed, and the kind of qualities in human nature people of that day liked.

Pupil: I think bravery.

Teacher (*writing* "bravery"): Anything else?

Pupil: A hero and a villain.

Teacher: Hero and villain; in other words, you take sides?

Pupil: Yes.

Teacher: What other qualities besides bravery?

Pupil: Treachery, of the kind in the ballad of Johnnie Armstrong.

Teacher: Yes, and the hero shows what quality?

Pupil: He believes in the king even when he is summoned before him.

Teacher: Good faith on one side, and treachery on the other. Anything else?

Pupil: Honor.

Teacher: Honor, yes. (*Writes* "honor.")

Pupil: A great deal of honor among themselves.

Teacher: Loyalty to each other; and as regards their enemies, what?

Pupil: They used to fight for fun, and they had certain rules; they were not really angry, they had to keep certain rules.

Teacher: In other words?

Pupil: They couldn't do just as they wanted to.

Teacher: There were rules of honor even toward your enemy, a sort of amateur spirit.

Pupil: Courtesy to their enemies.

Teacher: Courtesy, — and perhaps we might say this includes being true to the rules. Could we say anything about the style in which these poems were written, kind of language, and kind of verse form?

Pupil: Could be put to music.

Teacher: Easy to sing, for one thing?

Pupil: Yes.

Teacher: Complicated tunes, or simple?

Pupil: Simple.

Teacher: How about the words, the English?

Pupil: Old English and Scotch.

Teacher: Old English and Scotch; easy or hard to understand?

Pupil: After you have read two or three, I don't think it is hard.

Teacher: If you had been an old Scotchman of those times, should you say they were written in hard or easy language?

Pupil: Simple, — quaint.

Teacher: Simple and quaint — old-fashioned. Let us turn to the ballads you had for to-day; see how they compare with these old ones. The first one, *Lord Ullin's Daughter* — as regards the subject matter, is it the kind of story you think would appeal to ancient writers?

Pupil: It seems so; this one was about an elopement, they seem to write that kind of story.

Teacher: Anything else?

Pupil: Shipwreck.

Teacher: Do you think the old ballad writers would have been satisfied with the way the story came out?

Pupil: I don't think so; they liked to see their side win; the lovers won in this case, but were drowned; I don't think they would have liked it that way.

Teacher: If they are going to get away from the father, they ought to get away clear. I think that is true; things end simply in the old ballads, it is an out-and-out tragedy or a happy ending.

Pupil: They had some death, like Johnnie Armstrong, where the hero was killed.

Teacher: How was he killed?

Pupil: By treachery.

Teacher: Was there any here?

Pupil: No.

Teacher: Were they killed through anybody's fault, or by accident?

Pupil: By accident.

Teacher: How is it in the old ballads?

Pupil: In the first stories they were not, — a shipwreck.

Teacher: But in most cases it is a matter of somebody's treachery. In *Sir Patrick Spence* who gets drowned?

Pupil: The Scotch nobles.

Teacher: There it is the lords and all those other fine noblemen. As far as the style goes in *Lord Ullin's Daughter*, should you say that the story goes rapidly, as rapidly as possible, or should you say that if an old ballad singer were telling the story, there is something that could be left out?

Pupil: I think so.

Teacher: Can you see any group of verses that could be left out without breaking the story up?

Pupil: I think where it described the boat (*reads*): —

"The boat has left a stormy land,
A stormy sea before her —
When, oh! too strong for human hand,
The tempest gather'd o'er her."

Those descriptions could be left out; and (*reads*): —

"For sore dismay'd, through storm and shade,
His child he did discover: —
One lovely hand she stretch'd for aid,
And one was round her lover."

Teacher: You think the picture of how she looked in the boat does not count?

Pupil: I like it, but it could have been left out.

Teacher: The old ballad singers would have left out that part. Are there things in the earlier part of the poem that could be left out if you just wanted the story?

Pupil: The first verse.

Teacher: Better if they got started at once, perhaps. Miss Weiss?

Miss W.: The third verse: —

> "And fast before her father's men
> Three days we've fled together,
> For should he find us in the glen,
> My blood would stain the heather."

He says right after that that the horses are right behind him, so he could have left that out.

Teacher: He spends too much time in talking to the boatman, that is true.

Pupil: The seventh verse.

> "By this the storm grew loud apace,
> The water-wraith was shrieking;
> And in the scowl of Heaven each face
> Grew dark as they were speaking."

Teacher: You can't help wondering why they didn't get in the boat, and stop talking. The old ballad writers pared it all down to nothing but the story. Turn to the next one, — *Lady Clare;* would that have pleased the old ballad writers?

Pupil: I think it would have. It is just the kind of love story they liked, — it all turned out well.

Teacher: Turns out well in the end; and in it the lovers show what kind of qualities?

Pupil: Faithful.

Teacher: You like that?

Pupil: Yes.

Teacher: The sort of things anybody would like, all the admirable qualities of a good love story. I wonder if any one noticed the language of this poem, anything that would show that Tennyson was trying to imitate the language of the old ballads?

Pupil: "I trow they did not part in scorn."

Teacher: "I trow" — that sounds old-fashioned. Anything else?

Pupil: The way he brings in the nurse: —

"In there came old Alice the nurse,
Said, 'Who was this that went from thee?'
'It was my cousin,' said Lady Clare;
'To-morrow he weds with me.'"

And "thee" and "thou."

Teacher: How about the word "Said"; has that any subject?

Pupil: "Alice the nurse" is subject of both *came* and *said.*

Teacher: Yes: anything else?

Pupil: The last of that verse, "To-morrow he weds with me."

Teacher: That sounds old-fashioned; anything else?

Pupil: Some of the repetition.

Teacher: What line?

Pupil: "Are ye out of your mind, my nurse, my nurse?"

Teacher: And "Yet here's a kiss for my mother dear,
My mother dear, if this be so,"

sounds like the kind of repetition a man would make on a guitar, or something like that.

"'Play me no tricks,' said Lord Ronald,
'For I am yours in word and in deed.
Play me no tricks,' said Lord Ronald,
'Your riddle is hard to read.'"

It comes again and again. When you come to *Lucy Gray*, a poem which was very famous, and which is, perhaps, a little hard to get the real spirit of at first; did any one feel especially attracted by that? Miss Graves? What did you like about it?

Miss G.: It was entirely different from the others, — the way it turned out, — well, just the description in everything, — the snow, — then, it seemed to go easier than the others.

Teacher: We have rather taken it for granted all along that all these were very easy, — easy to sing.

Pupil: I don't think the later ballads are nearly as easy to sing as others.

Teacher: You think this *Lucy Gray* is different, you like the descriptive verses in it? Any special phrases or description that particularly struck you, Miss Graves?

Miss G.: I don't see any just now —

Teacher: Any one happen to remember any?

Pupil: "The minster-clock has just struck two."

Teacher: Miss Thibaut?

Miss T.: "Her feet disperse the powdery snow,
That rises up like smoke."

Teacher: "Her feet disperse the powdery snow,
That rises up like smoke."

Would that be in place in one of the old ballads? They weren't interested in the appearance of the snow very much. Miss Weiss?

Miss W.: I think I like this ballad because it leaves something to the imagination, the rest tell you everything; it doesn't say surely that she is still alive, it leaves it to you to think about it.

Teacher: Do you think Wordsworth himself thinks she is still alive?

Pupil: I think he does; I don't know if he does, but I think he does.

Teacher: In this remote country region, the people who would maintain that she was alive would be —?

Pupil: The country people.

Teacher: What is Wordsworth's attitude?

Pupil: I don't think he credits it very much; I think he respects it, but I don't think he credits it.

Teacher: He doesn't tell you whether he expects you to believe it or not; but at any rate, there is a fineness of feeling toward the country people that makes him respect the country superstition.

Pupil: I think she must have been lost, because if she hadn't, she might have come back to her mother and father.

Teacher: Of course, your imagination there is piecing it out; Wordsworth doesn't tell you out and out that she was drowned.

Pupil: I think he does; he says her footsteps stopped in the middle of the plank, and something must have happened there.

Teacher: The actual drowning was not described; you cannot help feeling that in the old ballads they would have given you a full description, like *Sir Patrick Spence;* the ballad ends how?

Pupil: Wordsworth was not trying to imitate the old ballads, was he?

Teacher: No; it is a good deal further away from the old ballads than the others we have had; it is a more imaginative poem, more beauty of phrasing and thought. Any other questions or comments about *Lucy Gray?*

Pupil: I like this verse: —

"They follow'd from the snowy bank
Those footmarks, one by one,
Into the middle of the plank;
And further there were none."

Teacher: You think that is because of the things Wordsworth does not say, the fact that he keeps a certain amount to himself?

Pupil: Yes.

Teacher: That quality of reticence, isn't it? How is it in modern times; have you noticed how you respect people who do not say quite all they feel; they keep their deepest feelings largely to themselves, and you can only guess at it by what is left unsaid? Are the kind of people who are represented in this poem the sort of people you ordinarily encounter in the old ballads?

Pupil: I don't think we do; the chief characters were the nobles and barons, the highest people in England and Scotland.

Teacher: These people were what?

Pupil: Common people.

Teacher: You get that from what phrase in the poem? Any one?

Pupil: Just after he asked her to go for her mother: "At this the father raised his hook"; he wouldn't have done that if he hadn't been a working man.

Pupil: I don't think he would have sent Lucy Gray after her mother in the snow; they would have been riding in a coach and four.

Teacher: How is it with some of the other early writers? Was Shakespeare more interested in common people or wealthy?

Pupil: Wealthy.[1]

The questions and answers quoted represent about two thirds of the work of a period.

Note the number of questions, their scope, the amount of thought necessary on the part of the pupils, the explanations offered by the teacher, and the relative amount of talking done by teacher and pupils.

[1] "Stenographic Reports of High School Lessons," *Teachers College Record*, September, 1910, pp. 18–26.

CHAPTER XII

SOCIAL PHASES OF THE RECITATION

EMPHASIS has already been given to the social aim in education. This chapter will discuss in some detail the possibility of realizing this aim through the conduct of the recitation. The real advantage to be derived from grouping children in classes is found in the opportunity which is afforded for exchange of ideas. A group of children seated with faces to the front responding to the teacher's questions and anxious only for her approval is an educational anomaly. The recitation is more than a place for the teacher to test the knowledge of the children, or to explain to them as a group some phase of their work with which they have had difficulty. It may be well to inquire concerning the motives which operate, the activities present, and the results commonly achieved by the recitation.

In many classes children seem to feel that the main purpose of the recitation is to please the teacher. Nor is the teacher's attitude different. She praises or blames in proportion as the children answer her questions or follow her directions. Of course there are times when it is the main business of the teacher to test children or to direct their activity; but more commonly it is the office of the teacher to work as a member of a group who are working together for the realization of some worthy end. Both teacher and pupil should be pleased when progress is being made in the work at hand because of the active participation of all of the members of the group.

There are other motives commonly operating which are even less worthy than that of pleasing the teacher. Children not infrequently are somewhat attentive to the work of the

class because they fear the punishment which follows failure. The more ambitious, on the other hand, come to look upon the recitation as an opportunity to display their superiority. They believe, and too often they are right, that the chief end of school work is to get ahead of some one else, — to get a higher mark. In each of the cases mentioned, the motive is essentially individualistic. Better have the boy at work in order to please the teacher than to have him idle; better use punishments and rewards and secure some results in knowledge and habits than to fail of these desirable ends: but the socialization of the boy and the maximum of intellectual activity for each member of the group can only be brought about in a situation which is genuinely social.

What could be more natural than that children should ask each other questions; that they should exchange experiences; that they should work in coöperation for the satisfaction of a common end? This presupposes that they have a problem or purpose which is genuine. But that is only to assume that there is some real reason for intellectual activity. Or let us suppose that the children are at work in order that the product of their effort may be used in some social situation. It is not particularly difficult under such conditions to get the liveliest kind of discussion, to secure the most earnest coöperation, or to have pupils themselves accept in a considerable measure the responsibility for progress in their work.

This difference in attitude toward school work, if once established, is apparent in all subjects. The work of a class in reading or literature will be transformed when children work together to understand and appreciate its content. Instead of the complaint that John has lost the place, it will be discovered that he not infrequently has a question to ask, or that he can contribute an explanation. The writer has seen a class of third-grade children as active in questioning each other concerning a reading lesson as they were on the playground in inquiring concerning the games they played or the novel expe-

riences in which they were interested. The teacher had attained this result by making the children understand that they ought to ask each other questions when they did not understand the thought expressed in their books, and that one of the best ways to explain was to tell of a similar experience which they had had.

In a class in nature study in a fourth grade a boy told a wonderful story of the activities of a squirrel. Ordinarily the teacher might have been expected to tell the boy that the story was untrue and that she did not want that kind of stories. In this class, however, the children felt responsible for the contributions which were made. The story had no sooner been told than the narrator was plied with questions. Where had he seen the squirrel? On what kind of a tree? What was the color of the squirrel? Just when did the events related happen? The boy could not answer these questions satisfactorily, and finally admitted that his story had a very slight basis in fact. The rebuke thus administered by his classmates probably did more toward giving this boy respect for truth than a dozen statements by the teacher that his contribution was unsatisfactory.

In an eighth-grade class the children were discussing the panic of '73. One of the boys maintained that the causes of panics were, in general, the same, regardless of the activities of a few individuals occupying important positions in government or in the commercial world. His contention was mainly that it was unfair to charge a president or a political party with the distress occasioned by a panic, when in reality the cause was to be found in economic conditions over which neither president nor party had control. One of the girls in the class objected, and cited as proof the panic of '37, which she claimed was caused by President Jackson. The teacher could have settled the question immediately by an authoritative statement, which most classes of children would have accepted. In this class, however, the teacher encouraged the class to participate in the discussion. In the

end the members of the class consulted textbooks and other more complete histories, and reached their own decision with comparatively little help from the teacher. The value of this work in history consisted mainly in the fact that the children, having once discovered the problem, felt responsible for its solution. They were engaged in the liveliest kind of thinking and discussion. They were learning where to go, and what materials to use in the solution of this kind of problem.

Possibly work in the industrial arts offers the very best chance for group work. At every turn in work of this kind there is the demand for careful planning involving discussion of ways and means, and for coöperation in the execution of the plan. A group of second-grade children were occupied most profitably with the partial furnishing and daily care of the teacher's rest room. They had first of all to decide what they could do to make the room more comfortable or more beautiful. They decided that they could make pillow, table, and couch covers, and window curtains, and that they could keep the room clean. In determining materials and design, as well as in the execution of the work itself, there was need for coöperation. The children gained not only in appreciation of some of the elements of home-making, but also in ability to plan and to work together. They were being socialized both by the content of their work and by the method employed in executing it. Another group of children, fifth grade, spent a number of weeks working together in planning and building a playhouse for the first grade. A wide-awake teacher enlisted the coöperation of three grades in the making and selling of candy in order to get money enough to buy pictures for the school. The preparation of a picnic luncheon, or meal for guests invited by the cooking class, the making of a large rug from many smaller rugs woven in such a way as to contribute to the pattern of the final product, the building of window boxes, the writing of the account of an excursion or other school exercise in order that

the best results may be brought together in the final account which is to be used in a school paper, are examples of the kind of work which may involve the kind of activity which makes for present social efficiency, and, therefore, for that social efficiency which it is the ultimate purpose of education to achieve.

One of the best ways to transform the recitation from a place where lessons are heard to an active social group is to plan definitely for a variety of contributions from the individual members or small groups of the class. When each member of the class studies the same pages of the same book, there is little incentive either to try to tell well what the book contributes to the problem in hand, or to listen to the recitation of one's classmates. If, however, one group of children have been referred to one book, another to a second book, and still another to a magazine article, to pictures, or other objective representation, there is some reason why each should do his best in reporting, and a genuine motive for following closely the contribution of each member of the class during the recitation is provided. Work of this sort is easily available in history, geography, nature study, or manual training.

In the subjects which seem to lend themselves less easily to variety in assignment, many possibilities will be found by the teacher who is anxious to prove the efficiency of this method. The best reading that the writer has ever seen in a third grade was done by children who read to each other. They used the readers in the school and books from home and from the public library. Each child was permitted to make a selection and submit it to the teacher for approval. Then came the period of preparation, extending often over two or three days or even a week. During this time the child was supposed to study the selection carefully, learn the pronunciation of difficult words, and practice reading the selection so that he might give pleasure to those for whom the reading was done. The one good reason for reading aloud is to read to an audience who cares to hear what you have to offer. These children were participating

in a social situation which demanded much of them, and they enjoyed the hard work which was necessary because the motive back of it all was genuine. In arithmetic, if arithmetic deals with the quantitative aspect of the experiences which the children are having, it will be possible to allow for some variety in the work which is assigned. If the problems are real, there will be a considerable interest manifested by the children in the solution of the problem and the results which are secured. Suppose a class were given a list of the articles which are to be put in a Thanksgiving basket, with instructions to find the cost of the basket so that a friend may pay for one of the donations which the class plans to distribute. In such a situation the children will be most eager to compare prices and total cost when the class next meets for the arithmetic lesson. Of course the carping critic will say that it is easy to devise a few cases of the sort listed above, but that in real school work you haven't time to make such plans. The only answer is that the difference between superior teaching and the kind that one sees all too commonly is found in the ability and willingness of the artistic teacher to be more nearly true to her ideals than are others. Any teacher, who is sufficiently interested, can find many situations in which she can vary the work of the class in such a way that the recitation period shall become a place where each member of the class brings his individual contribution.

Possibly the greatest need in our schools to-day is for more purposeful work for children. We are so much concerned about the many things which children ought to know that we are tempted to spend most of the time drilling children on facts which have very little meaning for them. The demand that the school be socialized is only another way of saying that the work of school children should function in the school itself and in their lives outside of school. It has seemed possible, in a few schools, to give children opportunity in the industrial arts to work at making something which they really want for

themselves, or upon a project which may involve the welfare of the group, as, for example, when they work upon school apparatus or furniture. An eighth-grade group of boys made the furniture for the principal's office; the children at Hyannis, Massachusetts, make baskets, brooms, hammocks, raise vegetables, build a boat or a fence, as occasion demands.[1] At Tuskegee the more mature students have even burnt the bricks and constructed the buildings for the school.

If a significant project in the industries is undertaken, it may furnish the motive for doing work along many lines. The raising of vegetables may involve arithmetic in the measuring of beds and the buying of seeds, in finding the value of the product, and, if the product be sold, in the keeping of a bank account. The study of dairying might very well involve a visit to a farm; the measuring of an acre; the estimating of the cost of production of milk and butter; and the return from the investment. The cost and means of transportation might be studied; a churn, butter bowl, and paddle might be constructed; and finally a complete account of these many experiences might be written and printed. If children are engaged in activities of this sort, there will be no question of socializing the school. By the very nature of their activities children will be led to question each other and their teachers; they will of necessity coöperate in those phases of the work which involve team work.

But it is not in the industrial arts alone that school work may deal with genuine situations. A good teacher finds a hundred situations in which children can write for an audience. The writer recently attended the closing exercises of an elementary school where the graduating class had composed a play which they presented. The main plot of the story centered in a prize essay contest, and, as might be inferred, the essays which were read were those which the children had written dur-

[1] Baldwin, *Industrial School Education*. A most helpful discussion of industrial work.

ing the regular class work. In geography the members of a sixth-grade class prepared talks to accompany pictures thrown on the screen from a lantern. In history certain incidents of the period which a class was studying were dramatized and presented to the whole school.

The president of a water company in a middle-western city told the writer that they kept things in better shape at the water works since they had agreed to allow the children to come to visit the waterworks whenever a teacher chose to bring a class. In the same city there is an unusual number of pianos in the schools, school playgrounds are being established, parents' associations are active in coöperation with the teachers to improve school conditions. If one were asked to explain why the schools in this city are better, why they are so loyally supported and so proudly spoken of by all classes of people, the answer would be found, I believe, in the fact that there is a closer relationship between the school and activities outside the school in home and city than in most other places. If teachers more commonly had in mind the needs of the children during the time they are not in the school, it would be easier to find situtions in which the school activities would be significant because of the genuine needs which are felt by the children.

If there were nothing gained toward socializing children through activities involving the coöperation of the whole group, the fact would remain that the best type of intellectual activity can be secured only with this most genuine of all incentives. Most people, even as adults, think better when they have some one with whom to discuss the problem in hand. It is true, too, that often the best teacher is one whose experience is somewhat similar to our own and whose attitudes and difficulties are similar to ours. Children can often interpret where teachers fail. It cannot be too often reiterated that it is the chief business of every teacher to render her services unnecessary. If the children taught are not at the end of any term's work better able to work for themselves, more ready to take the

initiative, more capable in defining their problems, in gathering data, and in finding solutions than they were at the beginning of the period, then the work has been a failure. Creative work [1] is not done when some one stands over the child and dictates his every step, nor does thinking consist in answering the questions which a teacher may put concerning the facts recorded in a text. There is entirely too much truth in the charge which is sometimes brought against our schools, that they fail to keep alive the intellectual activity which is natural to childhood.

We must never lose sight of the fact that a child who is vigorous intellectually, actively sympathetic with those causes which make for the general welfare, and able and willing to work in coöperation with others, even though this may mean that he subordinate himself to others for the time being, is the type of individual upon which our democracy depends for its perpetuation and for its future progress. It is necessary to emphasize the social side of school life because we have, in our anxiety to impart information and form habits, neglected this aspect of school life. The pity of it all is that in neglecting the child's social development we have done less efficient work in the fields we sought to emphasize because of the lack of genuine motive. Whether we are concerned with habits, with the acquisition of knowledge, with development in clear thinking, or in fixing ideals, the maximum of return will be secured in the genuinely social situation. Children working together on real problems are being socialized through participation in social activities. There is no other way in which the school can contribute so certainly to the accomplishment of the aim of all education.

[1] W. S. Jackman, "The Relation of School Organization to Instruction," *The Social Education Quarterly*, Vol. I, pp. 55–69; Scott, *Social Education*.

For Collateral Reading

John Dewey, *Moral Principles in Education*, and *The School and Society*.

Exercises.

1. What are the advantages to be derived from teaching a group rather than an individual?
2. What is the ideal relationship between teacher and pupils?
3. Why should a pupil face his classmates when he recites?
4. How could you provide for class discussions with the pupils you teach?
5. Name class projects which your class has undertaken which involve coöperation and end in a product which children consider worth working for.
6. Why do the household and industrial arts lend themselves especially well to the development of the social phases of the recitation?
7. When should it be wrong for one pupil to help another? Name as many occasions as you can where you would encourage coöperation and helpfulness.
8. Give an illustration of one project which may furnish an adequate motive for work in several school subjects.
9. Of what value are associations of parents and teachers from the standpoint of increasing the efficiency of school work?
10. Why is a genuinely social situation the best for the development of intellectual vigor?
11. Do you think children ought to accept any social responsibility outside of the school and home?
12. How may we hope to develop in children the desire to serve, the willingness to work for the general good?
13. How would you change your work in order to accomplish the most possible for the development of children who are now socially efficient?
14. Ought we to expect all children to accept the same social responsibilities, either as to kind or degree, in the school or in their out-of-school life?
15. If children do not work together for common ends in our schools, if the spirit of coöperation and service is not present there, ought we to be surprised at the non-social or anti-social attitude and practice of adults?

CHAPTER XIII

THE PHYSICAL WELFARE OF CHILDREN

INTELLECTUAL development, and more especially intellectual efficiency, are conditioned in no mean degree by one's physical condition. Schools have too frequently, and with justice, been accused of producing physical defects in children. It is coming to be recognized that we must in increasing measure take account of the hygienic conditions under which school work is done, as well as provide for the elimination or amelioration of physical defects. We now have open-air schools for consumptives, medical inspection, and dental clinics. There are some schools which provide school lunches at a nominal price or without cost to the pupils. Corrective physical training is coming to be recognized, along with special playground work. Everywhere appreciation of the importance of physical health as a condition prerequisite to intellectual vigor is leading those who have the welfare of the community at heart to demand that active measures be taken to protect and nourish the bodies of school children. It is the purpose of this chapter to indicate briefly the relation of teachers to this movement for physical well being.

The demand that light be sufficient and that it come from the right direction is familiar to all teachers. It may be argued that teachers cannot control the lighting of their rooms. The author has known teachers who have had blinds properly placed, walls and ceilings painted or papered with respect to proper distribution of light. Some teachers have even been instrumental in securing alterations in buildings or the erection of new buildings. Teachers who know that the area of

windows should be one fourth of the floor space, that the light should be admitted from one side of the room, and that it should come over the children's left shoulders, may not be able to meet all of these conditions; but they can do all that is possible to ameliorate defects, and can call attention to the dangers which the situation possesses for their pupils' eyesight by giving or having given tests and making known the results.

Modern school buildings are built with artificial ventilating systems. The success with which any system works depends in no inconsiderable measure upon the teacher. By opening windows in one room the efficiency of the ventilation of all other rooms in the building may be impaired. Failure to note the temperature may mean that children and teacher are suffering from a condition easily remedied by the janitor or engineer. Every teacher should have the temperature of her room recorded on the blackboard, where every one can see it, at least twice during each school session. Needless to say, the thermometer should be accurate, and, if possible, hung in the center of the room, not more than four or five feet from the floor.

Teachers are responsible for right habits of posture. If seats need to be adjusted, the teacher should note the fact and notify the principal. Although special cases may demand expert advice and care, the teacher must hold herself responsible for the posture of the majority of the class. Defects of vision may be either the cause or the effect of improper position of the body, and should bring from the teacher an urgent appeal for careful examination and correction. Frequent rest periods should be provided, the habit of correct posture insisted upon, and simple corrective exercises given by the teacher.

Schoolrooms are not infrequently the center of infection for the community. Any teacher can insist upon separate drinking cups, if sanitary fountains are not provided in the building. When a child appears with a rash, with an abnormal temperature, and not infrequently with *only* a cough, the teacher should appeal to the principal, the health inspector, or others

in authority for the elimination of the child from the group. The author has been in schoolrooms where two or three children in the incipient stages of whooping cough were allowed to infect the whole class. A school superintendent was distressed with what proved to be a veritable scourge of scarlet fever in one of his schools. Upon visiting the school he found one child on the playground proudly showing the other children how he could take flakes of skin from his arm. No one expects teachers to be expert diagnosticians, but any teacher should acquaint herself with the more common indications of childish diseases, and should act promptly when her suspicion is aroused, even though she prove to be wrong in half the cases. If anything is wrong, eliminate the child from the group, suggest that a physician be consulted, and await developments: this is the only safe rule.

In addition to her activity in eliminating contagious diseases, the teacher may often be the first to detect deficiencies in sight or hearing. Children who are inattentive and apparently dull may often be found to hear indistinctly. A very simple test for hearing is to tap a pencil against a desk out of sight of the child, and ask him to tell how many taps he hears. Headaches, squinting, the position in which the book is held, often indicate to the teacher eye deficiency which parents have not suspected. Any child who gives indications of eye trouble should be tested by teacher or principal, and, if any indications of difficulty are found, the parents should be urged to consult a competent oculist.

Dr. William H. Allen gives the following suggestions to teachers who would discover cases of adenoids and enlarged tonsils:[1]

"1. Inability to breathe through the nose.

"2. A chronically running nose, accompanied by frequent nosebleeds and a cough to clear the throat.

[1] Allen, *Civics and Health*, p. 53.

"3. Stuffy speech and delayed learning to talk. 'Common' is pronounced 'cobbed,' 'nose,' 'dose,' and 'song,' 'sogg.'
"4. A narrow upper jaw and irregular crowding of the teeth.
"5. Deafness.
"6. Chorea or nervousness.
"7. Inflamed eyes and conjunctivitis."

Any one who has known a child with a bad case of adenoids or enlarged tonsils, and who has followed the progress of the same child after the removal of the defect, will not think it too much trouble to insist that suspected cases receive the attention of a physician. In these cases, and where the child is suffering because of the ills superinduced by bad teeth, the teacher must work with the parents. Often through mothers' clubs or parents' associations, addressed by a physician and by teacher, the necessity for action, from a purely economic point of view, if from no other, can be impressed upon parents. It is possible that we shall have to resort to an appeal to private charity to save the child, or perhaps we shall in time have free compulsory dental, surgical, and medical clinics.

The children are society's greatest asset, from whatever point of view we consider them, and teachers should be most active in all movements which make for child welfare. There is no other group of people better acquainted with the needs of children, none other which stands in so strategic a position with relation to parents and the community at large. Parents should be taught the necessity of plenty of sleep, wholesome food, and clean skins for children. Better devote time and energy to this education of parents than attempt to teach children handicapped by the lack of proper living conditions. The anti-tuberculosis campaign, the pure milk crusade, the demand for medical inspection, should be earnestly supported, if not instituted, by the teachers of children. Health is not an individual matter. The welfare of the whole group is bound up in conditions which spell disaster for the individual.

Finally the teacher has a right to good health. Living under bad hygienic conditions, with children who are unclean and diseased, should not be demanded of any teacher. The efficiency of the work which the teacher does, no less than that of the children, is conditioned by her health. If it is true that the teacher may suffer because of diseased children, it is none the less true that a teacher in poor physical condition injures all of the children she is pledged to help. Happy, healthful lives for children and teachers is a condition which will be brought to pass when all teachers work for this end.

For Collateral Reading

S. H. Rowe, *The Physical Nature of the Child.*

Exercises.

1. How may the school superinduce physical defects in children?
2. Why are schoolroom floors oiled and swept rather than scrubbed and swept?
3. What suggestions for the improvement of all schoolrooms do you gather from the establishment of open-air schools for the anemic and tubercular?
4. What would you do to provide relaxation and plenty of fresh air on a day so stormy that children could not go out of doors for recess?
5. What could a teacher do to help a near-sighted boy or girl?
6. Is it safe to trust your feeling that it is too warm or too cold in regulating the temperature of the room?
7. When do you get your best work, when it is too warm, or when the thermometer is between 65° and 68° Fahrenheit? (If there is sufficient moisture in the air, a temperature as low as 65° will not seem colder than a temperature of 70° when the air carries very little moisture.)
8. What is the reason for using only pencils with large, soft lead or crayons for writing during the first year?
9. What can a teacher do to protect the community against contagious diseases?
10. If the school has no playground, what provision would you make for recreation in the schoolroom?
11. A large percentage of children have decayed teeth; how would you hope to provide that proper treatment should be given?
12. Why may we not consider health as an individual matter?

13. Why has the teacher a right to demand hygienic conditions in the schoolroom?

14. Why has the community a right to demand good health as a prerequisite for teaching?

15. How might teachers hope to secure hygienic conditions for children in their homes?

16. If a schoolroom needs redecorating on account of improper lighting, or a new heating and ventilating plant, and the school board does not supply these necessities, how would you hope to secure such improvements?

CHAPTER XIV

MORAL TRAINING

CHARACTER building must always be recognized as a most important function of the school. It is a mistake to divorce the intellectual training of children from growth in morality. If our country demands increased industrial intelligence, the training of men and women for leadership in manufacture, trade, and commerce, much more must it demand citizens of sterling character. Industrial and intellectual supremacy can mean nothing to a nation unless righteousness prevails both in public and in private life. The idea that the schools of our democracy are to train for citizenship has always been interpreted to mean an education which will fit for a life of service to the best interests of humanity. The fact that religious instruction, as such, is barred from our schools, does not mean that we are as a people irreligious, much less that we undervalue the significance of the moral training of our children.

School conditions offer advantages for moral training, even though the overemphasis on intellectual attainments may at times seem to give the teacher little opportunity for work in this direction. The fact of a group of children who may learn to work together, to help each other, to respect each other's rights, to serve the best interests of the whole group, in fact a situation which demands just those virtues which are demanded in society outside the school, makes the school in some respects an ideal situation for training in morality. Of course it is possible that the demand for intellectual attainment may so occupy the mind of the teacher that she will

resort to repression in order to get results in habits and knowledge. It is true, too, that the curriculum may be so narrow as to give less opportunity than might be desired for the type of activity which best lends itself to the development of social virtues. But if adverse conditions hinder somewhat the work of the teacher, they cannot deny a very important place to the school in the formation of character.

The increased responsibility of the school for the moral training of children becomes apparent at once when the influence of the home and the church of to-day are contrasted with the strength which these institutions once possessed. Regret it as much as we may, neither home nor church is as potent in the development of morality as they once were. Before the dominance of the factory system the boy or girl who participated in the activities of the home gained in appreciation of necessity for coöperation and in understanding of his responsibility to the group in a way that is denied the modern child. To be a party to those industries through which food was secured, clothing obtained, and shelter provided meant the exercise of all of the social virtues. It was fitting under such a régime that the school should devote itself largely to the tools of learning. But under our present conditions the demand is insistent that the school provide, in some measure, through its curriculum, its organization, and by means of its methods of instruction, for the development of the attitude of responsibility, and that positive morality which places a premium upon doing good.

Let us inquire still more closely concerning the conditions under which moral training must be effected in the school. First of all there is the fact of heredity. The children with whom we work are different by nature, and nothing that we can do will make them all alike. Then, too, there is the added factor of training before the school age. Many children come to school with bad habits and low ideals. The one thing that every teacher ought to realize as fundamental in moral train-

ing is the fact that differences in children must be met by a corresponding difference of appeal on the part of the teacher.

Over against the differences due to heredity and previous training, there is to be found the common instinctive equipment. Children instinctively imitate, construct, collect, inquire, emulate, sympathize, contest, wonder, are proud, and the like. This instinctive equipment furnishes the basis for actions which in turn become habits. The problem of the teacher is to use these instincts in securing desirable responses. Of course, undesirable responses have their basis in instinct. Here it is the business of the teacher to make the undesirable response result in discomfort, or, better, to substitute a desirable response. To be too proud of one's attainment as contrasted with others may be unlovely, but to be proud of work better done to-day than yesterday is a positive virtue resting upon the same instinctive foundation. The teacher may be worried because of the imitation of that which is socially undesirable, but she may use this same tendency to react to produce the social graces. There are cases in which the attempt to substitute may fail, and the necessity for inhibition by accompanying the undesirable response by unpleasant results arise. The important thing is not to neglect this instinctive equipment. The tendencies shown in childhood furnish the one basis for moral development, and their neglect may result in lack of moral strength throughout the life of the individual.

Besides the differences among individuals, there are differences corresponding roughly to stages of development. The authority which is accepted without question by children of six will be seriously questioned by the adolescent. Children grow not only in their ability to judge of the right action, but also in their demand that authority be amenable to reason. There can be no doubt but that rational morality is the type which the school should attempt to develop. To this end it is essential that the responsibility of children for their own

actions and for the welfare of the whole group should increase as they pass through the school. There is a possibility of controlling little children through fear, but the time comes when threats no longer avail. It is a sorry spectacle to see a mature individual who must still be controlled by fear of the results which will follow misconduct. It may be questioned whether the continued use of corporal punishment may not result in arrested development in morality. The desire for social approval develops throughout the school period. When children or adults fail to see the reasonableness of a demand, this appeal to approval of the group may be most effective in securing desirable responses. The rule which the teacher must follow is never to appeal to a lower motive when a higher may be used. Fear, respect for authority, faith in the wisdom of the one directing, desire for social approval, ability to pick out the essentially moral element in the situation, and desire to act in accordance with one's best judgment, — thus runs the hierarchy of motives which control. In any group some children can be appealed to by one motive and some by another. The teacher who is developing moral strength in the group will constantly seek to appeal to the children on a plane just higher than that which they have hitherto occupied.

Another factor which plays an important part in conditioning the work of the school in developing morality is the generally accepted standards of the community. Social heredity furnishes the basis for belief in the continued development of society. The progress that has been made, the standards once established, become the common heritage of the members of the group. Drunkenness is no longer considered gentlemanly; we do not lie to our enemies when they have a right to know the truth; our ideal of civic righteousness demands that a man be as honest when he serves the whole people as he is when he deals with individuals. The importance of this factor of environment in determining the moral

life of the individual is admitted even by those who emphasize most strongly the importance of original nature. For the school it gives hope because of the influences which may there be brought to bear upon the child; and it adds a problem, because the school may not ignore the home or the street from which the child comes. It does not seem unreasonable to expect that teachers will at no far distant day become most active in all activities which make for better, cleaner, more worthy surroundings for the children whom they attempt to train during a relatively small part of their waking hours.

The physical condition of children and teacher has much to do with the possibility of effective school work, and training in morality is not an exception to the rule. There is not much use in trying to form moral habits, nor in asking children to form moral judgments, in a room filled with foul air, with the temperature above seventy-five. Poor physical condition on the part of the teacher is often responsible for lack of control on the part of children. A nervous, worn-out teacher is apt to nag, is almost sure to magnify insignificant acts, and by virtue of her lack of control of herself is in no position to control or instruct children. It would seem at times that we need medical care for teachers even more than for children. One child in poor physical condition may be hard to manage, and may fail to gain much either intellectually or morally from the school; but one teacher in poor physical condition may do positive injury to a roomful of children. A few days with a dyspeptic teacher may mean the formation of bad habits which it will take weeks or even months to eradicate.

We are beginning to realize that there is a direct relation between hygiene and morality. The underfed, overworked, physically unfit are so frequently immoral that we had almost charged their condition to their immorality. In doing so we were often confusing cause and effect. However the problem may be solved so far as adults are concerned, we are satisfied that children of school age are entitled to happy, healthful

lives in so far as it is possible to achieve this result. The work done to secure better physical conditions, both in school and at home, is probably as significant for the morality of children as is any instruction that is given; and such care for the physical welfare of children is the condition without which we have no right to expect them to grow morally strong.

While all are agreed as to the necessity for moral training in our schools, there is a difference of opinion concerning the method to be used. One school advocates direct moral instruction by means of fairy tales, history, and other stories, and by moral precepts. The advocates of this form of instruction believe that they can in this way make children understand clearly what is right, and because of the emotional reaction produced by tale or story the children will not only know the right, but will also want to do right. Those who believe in indirect instruction find in the regular work of the school, in the teaching of all subjects, as well as in the control of the children in school, the best opportunity for moral instruction.

With regard to the direct method, it seems to the writer that it is assumed that "to know right is to do right." So far as the emotion aroused by a story of bravery, or honesty, or temperance is concerned, the chances are that it will have entirely evaporated before any occasion for action is found. And right here is one very great danger in this sort of instruction. To have the emotions aroused without any outlet in the corresponding action may result in developing individuals who are entirely satisfied with the emotion. They learn to delight in emotions, and lack efficiency in action. The time to tell the story of bravery is when bravery is actally demanded; or for the child who knows the story simply as a story and without any attempt to use it to teach morality, the story may be referred to when this virtue is demanded. Likewise with the moral precept. For one who has had some experience in acting in accordance with his best moral judgment, the precept may be used as a significant generalization. Honesty may be

the best policy after you have won in the struggle and have the approval of conscience, and of those whose judgment you value. You may be ashamed to be designated by the name of the unlovely character in the story, when you are really guilty of his weakness of character. It would seem safer, from what we know of the emotions, to assume that actions are responsible for emotions rather than to expect the emotion to produce the corresponding action.

In support of the indirect method of teaching morality, it may be argued that the school presents continually a situation in which moral action is demanded.[1] It is possible, of course, to deny to children any considerable responsibility for their actions. Children who are hedged about by rules and regulations, who are constantly directed and commanded by the teacher, will grow little in power to form correct moral judgments. But the ideal school is in fact a society, and the demand for moral activity, and consequently the chance to grow in morality, is as great as in any other life situation. It must be remembered, too, that the main purpose of the moral training which the school gives is to make moral growth continuous. New situations will demand new adjustments, and it is not possible to supply the child with a morality which will be sufficient for his future needs. The one preparation which will certainly be effective in making possible later growth is to be found in the moral action of to-day.

The subjects of instruction lend themselves to moral training. Moral strength depends upon interest in those activities which make for social welfare, in the exercise of judgment in determining the course of action which will contribute most to the general welfare, and in action in accordance with the judgment rendered. Our course of study contains much which should result in increased appreciation and sympathy in the activities which characterize our modern society. Geography, history, nature study, literature, all deal with men in their

[1] Dewey, *Moral Principles in Education.*

relationship with one another in a common environment. If teaching means anything more than gaining knowledge, the method employed in school subjects cannot be without moral significance. Teachers who demand accuracy, who are more interested in the truth of history than in a moral tale, who are open-minded rather than dogmatic, who seek to exalt the intellect and to hold the emotions under control, are doing more effective moral teaching than those who preach by the hour.

As has already been indicated,[1] the ordinary school work lends itself to the development of positive moral virtues. To work together, to contribute to the welfare of the whole group, to determine conduct in view of the possible effect on others, is to exercise those virtues which are demanded in all social situations. Pride and joy in one's work and contempt for the shirker are as natural in school as in any other situation. The so-called school virtues of punctuality, regularity, obedience, and industry are virtues outside of schools by virtue of the same sanction which gives them validity in the school society. It is important to realize that many of these virtues must be reduced to the basis of habit in order to be most effective. Acts of kindness, courtesy, punctuality, repeated often enough, become second nature. They need no longer to be thought about.

In the field which requires judgment, it is also true that one's attitude may become habitual. Much which we call morality can be accounted for by taste. Many boys and girls have been saved the struggle through which others pass by ideals and contempts which they have derived from their associates. Fortunate, indeed, is the boy or girl who can say: "The members of our set do not frequent saloons, do not lie or cheat, play fair, work hard, dare to do right." All of us tend to derive our moral code from the group of people with whom we are constantly associated. There is honor even among thieves,

[1] See chapter on Social Phases of the Recitation.

because they have a code which they respect. The teacher who secures the coöperation of the leaders of the group can modify, indeed transform, the moral attitude of a class by this appeal to the code which the whole group accepts and upon which the leaders insist.

The highest type of moral action is that which involves judgments of worth. When one asks himself the question, is this right, will it be for the general welfare, and then acts in accordance with that judgment, he has performed an essentially moral act. Training for this sort of action is of the same sort that is demanded wherever the judgment is involved. The child must be taught to analyze the situation and to pick out the essentially moral element. The writer once knew a high school class who habitually cheated in examinations. They said that they were getting ahead of the teacher. The principal explained that they were dishonest, that cheating was stealing. The attitude of the class changed. They responded to this analysis of the situation which pointed out the moral element. What we call thoughtlessness and the sowing of wild oats is often to be explained by the lack of analysis which makes prominent the moral significance of the contemplated action. The school should give opportunity whenever possible, whether in ordinary schoolroom work, on the playground, or with reference to extra-school activities, for the exercise of the moral judgment. Power to analyze new situations and to act morally depends entirely upon previous judgments and actions.

Any discussion of moral training would be incomplete which did not take account of the reformation of the wrong doer through school punishments or discipline. "Discipline and punishment are teaching processes as much as are grammar or arithmetic lessons, and when we remember that conduct and behavior is the whole of life, we must welcome the occasions for discipline, and even for punishment. No sane person is glad that a child's instincts, impulses, and habits have taken wrong forms, but the real teacher is glad that these forms manifest

themselves, so that they may be worked over into correct reactions." [1] The key to the situation is found in placing the responsibility with the child. If a wrong has been committed, either he has failed to think of the moral significance of his act, or he has chosen to do wrong. In the one case reformation may be brought about by making clear the nature of the act; in the other the child must will to do differently, and must by his own act regain his place in the group whose welfare he has transgressed. What the ordinary situation demands is more of thinking on the part of children and less of resentment and anger on the part of teachers.

Punishments need to be differentiated to fit the child. The writer has known boys in active rebellion against school authority who would accept corporal punishment rather than give any evidence of intention to submit. In such a case this form of punishment was justified. Happily such cases are rare with the teacher who knows how to work with children. Even in cases where the offense is seemingly identical, the punishment must be varied to suit the individual to be reformed. Suggestion may suffice for one, another may be persuaded, and still another must be labored with at length in order that the judgment which the teacher has passed may be accepted by him as valid. In any event it is the thoughtful individual, who has the habit of analyzing the situation when in doubt, and then acts in accordance with his judgment, which it is the purpose of the school to develop.

The importance of the moral influence of the teacher has always been recognized. At times, however, the negative rather than the positive factors have been emphasized. It is well enough to demand that the teacher be free from vices, petty or great; but it is even more important to inquire concerning the positive virtues which characterize the instructor of children. We may hope that our schools will develop open-

[1] *Moral Training in the Public Schools*, p. 41. The essay by Charles Edward Rugh.

minded children, provided the teachers are not dogmatic. Courage, industry, integrity, are fundamental virtues. Does the teacher possess them? Sympathy with all activities which make for public good is demanded of all in a democracy. Does the teacher participate, is the teacher a factor, in those movements which make for improvement in the community? The ideal teacher is an intelligent, hard-working public servant, whose field of endeavor is limited only by the needs of the community which he serves. The number of teachers who have thus exalted the office of teacher in the community is happily increasing. The moral effect upon the lives of children of association with such a man or woman cannot be overestimated.

For Collateral Reading

Moral Training in Public Schools, Chapter I, by C. A. Rugh.
J. MacCunn, *The Making of Character*.
The Essentials of Character, by E. O. Sisson.

Exercise.

1. Why is the school a good situation in which to train children in morality?
2. Is the man who simply does not injure others to be thought of as living a moral life?
3. Do you think any teacher has a right to claim that she is not responsible for the moral training of her pupils? Why?
4. In what way do the instincts furnish the basis for moral training?
5. Should you treat all of the children alike in situations which involve a moral issue?
6. How would you hope to have boys come to render the moral judgment that it is wrong to throw stones through the windows of a vacant house?
7. How may school spirit and school standards contribute to the development of morality?
8. Name some troublesome things which boys do that might be explained by bad physical conditions in the school or in the home.
9. What do you understand by the direct method of moral instruction? What is the strength and the weakness of this method?
10. Do you think the moral significance of a story or a poem should be taught in a lesson in literature?

11. Name school situations which involve moral judgments and which offer opportunity for training in morality.

12. How would you hope to train children to form the habit of asking themselves whether a proposed line of action was right before acting?

13. How may the one who does wrong in school provide the opportunity for the best sort of training in morality?

14. Is there ever any defense for corporal punishment?

15. How important do you consider the influence of the teacher in developing morally sound boys and girls?

CHAPTER XV

CLASS MANAGEMENT

In any discussion of class management it is necessary to distinguish clearly between organization and control as a means and as an end. Much of the discussion of school and class management assumes that its sole purpose is found in economizing time and energy for teacher and pupils. Class management, from this point of view, is important as the means without which effective work cannot be done in the school. Such a view neglects to consider the opportunity afforded in managing a class for growth on the part of pupils in the power of self-control. Any school which plans to reproduce in its life the conditions commonly found in life outside of the school must allow children to accept responsibility for their own acts, and will, therefore, look upon management as an end.

The discussion has not been wholly one-sided. At times there has been considerable controversy concerning the kind of management which was most to be desired in the schoolroom. Those who have thought of management as a means only have been apt to overemphasize routine; while those who have thought only of the opportunity afforded for growth in self-control have neglected to realize the importance of habit in situations which are invariable. The adherents of the one type of control want everything done at the tap of the bell, in accordance with the rules which have been made by the teacher. Their opponents would do away with "mechanized routine," and would expect children to exercise their judgment as each question arises. This difference in point of view is easily

reconciled when we look at management now as a means and again as an end.

If a fire drill is to be effective, every one must drop the work in hand when the signal is given and march out of the building in an order and by a route which has been determined previously and from which there is no variation. Here we have the best example of management as a means. There can be no question in this situation concerning the right of the individual to exercise his judgment. The safety of all depends upon the absolute following of rules, upon the degree to which the response to the fire drill has become a matter of habit. If we analyze this situation, we will discover the elements which characterize situations in which we are to look upon management as a means. In these situations we should strive to secure habitual responses.

In the first place the response demanded is invariable. It will not do to march out of the building one way to-day and another to-morrow. The class may not go before or after its place in the line. The speed with which the building is emptied depends upon every individual. Here we have the second element: the welfare of the whole group demands that the situation be followed always by a certain response.

Let us examine now some of the schoolroom situations in the light of these criteria. In passing books, paper, pencils, and the like, a definite order should be followed. In this situation the end desired is invariable. What is wanted is to place the desired material in the hands of each pupil with as little delay as is possible. The welfare of the whole group depends upon this invariable response upon the part of each pupil. If any one fails to do his part, there is delay and loss of time in the work which it is desired to accomplish. For the same reasons it is wise to have a definite order in getting wraps, a rule concerning the manner of passing in the room, the habit of rising and facing the majority of the class when reciting, and the like.

Let us now examine other situations which afford an opportunity for the exercise of self-control, in which management is an end. In some schools children are formed in lines five minutes before the hour and marched into the building. There is no good reason why children should march into the building. The end desired, that they all be in their places promptly, can be secured by ringing a warning bell and requiring that all enter the building as they see fit and be in their places on time. In the latter instance they have a chance to act as normal human beings who accept and fulfill their responsibility to themselves and to the group. The desired end is secured, and, far more important, the children are learning to exercise that self-control which is demanded outside of school. Of course, it may be objected that it is much easier to control the children, if you march them into the building. The answer is found by suggesting that the school does not exist primarily for the ease of teachers, but rather for the development of socially efficient children.

A principal who had some difficulty in having the boys come from a somewhat distant playground promptly lined them up for a race to the schoolhouse. They found that it took them little more than a minute to reach their schoolrooms. The boys understood his suggestion that the warning bell, rung five minutes before school opened, afforded ample time to reach their rooms and be ready for work when school opened. It would have required less thought on the part of the principal and less self-control on the part of the boys to have marched them to the schoolhouse at the right time each day. Many school situations offer similar opportunity. Passing through halls, asking the teacher questions, leaving one's seat for books or materials, consulting with one's neighbor may, in the hands of a skillful teacher, become a most efficient means of training children in self-control. In all such cases management is an end, in the sense that these opportunities are sought by the teacher because of their value in training children.

Pupil participation in school government has been much advocated of late as the best means of securing a feeling of responsibility on the part of pupils for the welfare of the whole group, as well as in the exercise of self-control. As long as these ideals control, it matters little what particular form of organization is utilized to secure the ends desired. What sometimes happens is an exaggeration of the importance of the machinery of government, with a corresponding lack of self-control, or exercise of social responsibility. The writer once visited a school which was much talked of because of its system of "pupil self-government." He found there the worst bullying of small boys by those who held offices that he has ever seen in any school. Many of the children declared that they were not parties to the government supposedly in control of the school. When the teachers were absent from their rooms, the children droned over certain set exercises which were constantly before them and from which type of activity they were not permitted to depart. Now these defects in school management may not all be charged directly to the overemphasis of the machinery of government, but they were due to the fact that this machinery, this form, had taken the place of genuine self-government on the part of the pupils.

A wise principal or teacher may secure good results by inaugurating a system of pupil participation in school government, but the wise guide and counsellor must be there all of the time. Introducing children dramatically to the machinery of government will not place old heads on young shoulders. Children will still be childish in their judgments and in their ideas of punishment, even though they be called senators, aldermen, policemen, judges, and the like. The dramatization of city or state government will undoubtedly help in the understanding of the function of citizens and of their servants, the officeholders. This alone would be sufficient justification for introducing in the upper grades, in dramatic form, a system of government, without expecting that it would in any consider-

able measure relieve teachers or principals of the necessity of guiding children in their development in power of self-control, and in their acceptance of social responsibility.

The same system of pupil participation in school government will succeed with one principal and set of teachers and fail in another situation. The results which are most worth while, self-control and the exercise of social responsibility, will be secured without any of the forms of civil government in one school, while another principal will claim that success in his school is due to his system of "pupil government." No teacher need feel condemned because she cannot succeed with a particular scheme of government, and none should be unduly elated because of the invention or use of some particular form of organization. The essential element in school management is found in the spirit of coöperation and helpfulness which should actuate teachers and pupils.

The questions of management considered above cover much of the ground usually considered under the head of school discipline. The same problems, especially from the standpoint of punishments and rewards, are considered in the chapter which deals with the moral training of children. It may be well to add here that the problem of discipline is largely one of good teaching. Children who are hard at work seldom worry the teacher. Right conditions for work may play an important part. The consideration of some of the problems of organization is, therefore, in place in a chapter on management.

The ordering of the daily program is one of the most important elements in classroom management. The desire for variety is strong in children, and their power to concentrate their attention upon a single kind of work is correspondingly short. In the primary grades periods of from eight to twelve minutes, with a possible extension to fifteen, will give sufficient opportunity for change of work. These periods may be lengthened to thirty or even forty minutes in the upper grades. The length of the period will depend upon the variety which may be

found in the work of a single period. In a reading lesson which includes word drill, reading, and oral composition, the maximum period may be used, while a period devoted to number drill may be worse than useless after the first five or six minutes. It is undoubtedly better for children to work to the maximum of their capacity for short periods than to dawdle for twice the time. In the upper grades twenty minutes may be as long as children can work on the development of a difficult problem in geography, while they may be active and willing to continue work in a literature lesson after thirty-five or forty minutes. The writer has seen a class of seventh-grade children who worked consistently for forty-five minutes on a history problem which involved discussion, map work, and the consulting of reference works.

Group instruction has long been recognized by teachers of large classes as essential to the best work. In a class of forty or fifty children, however carefully they may have been graded at the beginning of the year, there will appear differences in attainment which make it necessary to divide the class into two or more groups in some subjects, in order to work to best advantage. In the lower grades, especially in the first, where grading is least able to place children on the basis of their ability, there is the greatest demand for group work. As many as three or four classes in reading may be necessary in the first grade. It must be remembered that such grouping should never be made to apply to all subjects, nor is it necessary to apply the group plan to any subject without variation. Children divided into three groups for reading may do very well in two for arithmetic, and may all work together in nature study or constructive work. In reading it will be worth while to have all work together at times on work which is possible for the least capable and which may serve as a review for the more advanced group.

By the time the fourth or fifth grade is reached, the pupils will be somewhat more evenly graded. It will still be necessary,

however, to group pupils in those subjects in which the sequence is such that the pupils' advance depends upon the complete mastery of the part of the subject already covered. In arithmetic, in the more formal part of the work in English composition, and sometimes in geography or history, two groups are advantageous.

When pupils all work together it is not expected that all will be able to do an equal amount of work. It is especially important that provision be made for the brighter members of the class, in order that they may have enough work to keep them active and alert. It too often happens that in large classes the work is scaled down to meet the ability of the poorest half of the class, in consequence of which the brighter pupils learn to loaf and tend to lose interest in school work. However many groups the class may be divided into, there will always be the necessity for individualizing the children of each section. The brighter ones must be given assignments which are beyond the ability of the less capable, while a minimum of achievement must be accepted when it represents the best effort and means the continued development of the pupil who is weaker intellectually.

Good teachers provide for individual needs, not only by grouping their classes on the basis of their ability, but also by giving individual instruction. No daily program should fail to provide a period during which the teacher can devote herself to the needs of those individuals who need special help. It may be to help the boy or girl who has been absent on account of sickness, to explain a difficult problem in arithmetic, to help in the interpretation of a map or diagram, or to teach the pupil how to study; always there will be plenty for the teacher to do who thinks of her pupils as individuals during the half hour or more devoted to individual instruction.

The idea of providing individual instruction may be made the central idea in organizing the daily program, as is done in

the Batavia system,[1] which allows one half of all school time for individual instruction. There would seem to be little need for devoting so much time to individual instruction in a school having any adequate system of grading and promotion. Indeed, as has already been pointed out in the discussion of social phases of the recitation, there is a positive advantage in teaching in groups. The extravagant claims sometimes made for particular systems of organization, especially when it is declared possible by means of the system for *all* children to reach the same standard of excellence, bear on their face the evidence of their fallacy.

Any attempt to give group or individual instruction must be accompanied by provision for seat work for those who are not working with the teacher. In the lower grades much has been accomplished by allowing children to express themselves with colored crayons and paints, with scissors and paste, as well as with the more common pencil and paper for copying, or the letters and words for word and sentence building. There is probably as much worth in the seat work which results in the expression of the ideas gained from a story by means of crayons or with scissors as there is in the conversation concerning the story in class. As children advance, more difficult problems in constructive work and in study may be assigned.

In the intermediate and upper grades the problem of having children occupied who are not directly under the supervision of the teacher is largely the problem of teaching these children to study. A child in the fourth grade ought to be able to discover and note carefully the difficulties which the lesson assigned presents, and he should, in some measure at least, be able to satisfy the problems which arise. In succeeding grades, if children are being taught to study, they ought in increasing measure to be able to gather data, organize it, and proceed to the solution of their own problems.[2]

[1] Bagley, *Classroom Management*, Chapter XIV.
[2] See discussion of the study lesson, *ante*.

The conduct of the recitation has been discussed at length in preceding chapters. It may be well to emphasize here the more essential criteria. In a well managed recitation all of the children are responsible for the progress of the class all of the time. To this end the teacher addresses her questions to the whole class before calling on any individual. The pupils are held responsible for the answers which are given. The teacher does not constantly repeat and explain answers. When they do not understand, children are expected to ask each other questions. To secure these ends the class should, when possible, be seated so that the one reciting may easily face the other members of the class. The ideal seating is found in the kindergarten circle. In a room with sufficient space in front, the children may be seated or may stand in such a way as to gain most of the advantages of the circle. If pupils must sit in rows of seats with their backs to each other, it may help to have the children reciting face the majority, and to encourage those whose backs are toward the speaker to turn in their seats. It would seem possible that we may sometime furnish our schoolrooms with reference to our ideals of education; that a classroom may sometime become a place fitted for a group of children who are to work together in the solution of their problems.

The lack of proper management of a class may hinder the work of a teacher whose work is excellent in other respects; but no skill in management, however efficient in keeping children in order, can take the place of good teaching. Most men and women who know how to teach learn to manage a room full of children. There are still a few who call themselves teachers who exalt management unduly. For them the essential elements in school teaching are discipline, control, organization. To the young teacher, or to the one who would grow, the ideal of better teaching must constantly lead toward greater efficiency. Observe any successful teacher, and you can discover the devices of management which allow

her to work to best advantage, and the use which she makes of the opportunities which the school presents to develop self-control and social responsibility on the part of her pupils.

For Collateral Reading

W. C. Bagley, *Classroom Management*, Chapters I to VIII inclusive.
J. A. H. Keith, *Elementary Education*, Chapters VI and VII.

Exercises.

1. Distinguish between class management as a means and as an end. Give examples of each.
2. How would you hope to have pupils feel their responsibility for good order in the class?
3. Why do schemes of "pupil self-government" sometimes fail?
4. What is the argument in favor of having pupils pass into or out of the building without marching in line?
5. Why is it important not to have the class periods too long?
6. Why do teachers sometimes divide their classes into two or more groups even though they are all of the same school grade?
7. Can you ever expect to find a group of children all of whom will do equally well in all subjects? Are the weaker pupils necessarily lazy?
8. Why is it important to make special provision for bright children?
9. What is the relation between the proper organization of class work and teaching children how to study?
10. What do you think of a program which provides for class instruction during every period of the day?
11. What criteria would you apply in judging your own class instruction?
12. What is "good order" in a schoolroom?
13. How would you judge of the success of a teacher in managing a class?
14. Name all of the activities of a class which in your judgment should be reduced to routine.
15. What rules would you make on the first day of school for the guidance of your pupils?
16. What is the relation of good teaching to good class management?
17. If a majority of the class are misbehaving, where would you expect to find the cause?

CHAPTER XVI

LESSON PLANS

The best teachers never reach the point where preparation for the day's work is unnecessary. The teacher who stimulates her pupils to their best effort must herself be interested in the work in hand. If nothing new in material or method is found to vary the work, interest soon lags. The lesson often repeated is as dry and lacking in power to interest or inspire as the proverbial sermon taken from the barrel. Even when a teacher has taught a most successful lesson, it is dangerous to try to repeat that exercise in precisely the same way. The two situations will not be alike. The fact that she tries to repeat will take the edge off the lesson for the teacher, and make it correspondingly dull for the pupils. Young and inexperienced teachers are often most successful because of the zest with which they attack the problems which are new to them. The older teacher may be able to keep a class in order and teach them something with a minimum of preparation; but her best work will be done only when she has planned as carefully as the novice for whom the need of preparation is so apparent.

The subject matter which should be drawn upon for any lesson constantly changes. No two groups of children have had exactly the same varieties of experience; hence the need for varying the approach, as well as the demand for differences in observations, experiments, reading, or other methods employed to bring the data necessary for the solution of their problem before children. Subject matter is growing, is being made all of the time. Last year's discussion of the geography

of Europe, of South America, of Africa, or of Asia will not suffice for this year, because interesting and important events have occurred in these countries during the year intervening. For the wide-awake teacher, even that most exact of the sciences, mathematics, represented by arithmetic in our curriculum, will change; since the number aspect of children's experience will vary. If spelling means the study of words which are needed for use in written expression, the work in spelling will vary just as surely as the occasions for written expression vary among children. No teacher could, if she would, repeat a series of lessons which deal with natural phenomena. In any field, the need for preparation becomes apparent for one who would command the material which should be made available for children.

In the preparation of a lesson plan the first and in some respects the most important step is to become acquainted with the subject to be taught. There is no method of teaching which can take the place of a thoroughgoing knowledge of the material which bears upon the topic to be treated. The teacher who finds in the life of the children outside of school, in school activities, in books, pictures, magazines, in study and travel, material for her daily class work, will make any course of study vital and interesting to children. In such an atmosphere pupils will grow not only in knowledge, but also in the desire to inquire and investigate and in power to satisfy their intellectual craving.

After the teacher has in hand an abundance of interesting material, the next step in the plan is to organize the data to be presented. Some organization is usually found in textbooks and courses of study, and it is possible simply to try to fit any additional material which may have been collected to the scheme provided. The difficulty with this ready-made organization is found in the fact that it has little or no relation to the needs or problems of the particular group of children to be taught. Any organization which is to be significant to

children must take account of their point of view, and attempt to present subject matter in response to the need which they feel for the material to be presented. This is precisely what is meant by the difference between the logical and psychological methods of presenting subject matter. Not that the psychological method is illogical, rather it takes account of the child's needs and is for him logical beyond the most complete adult logical scheme. It may seem logical to the adult to teach the crayfish by calling attention to the large parts and then to the smaller parts in order, or to deal with the structure of the skeleton, nervous and circulatory systems, connective tissues, and the like. To an eight-year-old child, the problems which will probably be most logical, most satisfying to his desire for investigation, will deal with the way in which the crayfish gets his living, how he protects himself from his enemies, how he brings disaster by making holes in levees, and how important he is as an article of food. In satisfying these childish problems, much of the information which might have been imparted, had the adult scientific order been followed, will be mastered by the pupils. Much more will be remembered, because the information is associated with the solution of interesting problems. It may seem logical in teaching India to a sixth-grade class to treat of prevailing winds, surface features, climate, vegetation, animals, mineral products, and people; but the children whose teacher approached this subject by asking them to try to discover why they have had such terrible famines in India probably remember more of the geography of India to-day than those who followed the adult logical order. In organization, then, the starting point is to get the child's point of view, to discover his problems, and to organize the material to be presented with reference to these childish aims.

Good organization demands that material presented to satisfy the demand made by the child's problem be grouped around few coördinate heads.[1] Many topics of equal value

[1] McMurry, *How to Study*, Chapter III.

in an outline generally indicate a lack of organization, a lack of appreciation of the relation of the various facts to be presented. For example, one might think of a great many facts about plant growth; the seeds must be put in the earth, the weather must be warm enough, they must have water, they need to be hoed, the ground should be fertile, they need air, they grow best when they have sunlight, they may have too much moisture, in rocky ground the soil may not be deep enough, they must not be too close together, weeds and insects must be destroyed, the roots should not be disturbed, the choice of the seed is important, and so on. For a group of lower-grade children there are two problems; namely, (1) what kind of plants do we want, and (2) what can we do to make them grow well. Under the first head would come the plants which are suitable for our conditions of soil and climate, and the question of seed selection. Under the second head the topics will be moisture, sunlight, air, and cultivation, including the destroying of insects or other pests. Each of these topics will be suggested in answer to the problems which have been raised (what plants we want, and how we can make them grow well) by a group of children who have had any experience with growing plants. If any important topic is omitted, the teacher will call for it by a question which suggests the lack of a complete solution to the problem which is being considered. This brings us to the next step in plan making.

A good lesson plan will include pivotal questions which will serve to call for the data as indicated by the main topics given in the organization of the subject matter. The problem of questioning has been discussed at some length in a previous chapter.[1] In planning a lesson, a question or two which will discover to the children the problem to be solved should come first in the plan. With the problem before the children, the function of the question is to stimulate thought in the direction of the solution of the problem. The writer is familiar with the

[1] See *ante*, Chapter XI.

objection that questions cannot be prepared ahead of time. It is true that the form of question may need to be varied because of progress or the lack of it, not anticipated by the teacher, but the question carefully prepared ahead of time will help rather than hinder in the formulation of a question to meet the situation. It is true, too, that not all of the questions can be prepared ahead of time. All the more reason for careful preparation of a few questions which will enable the teacher to prevent wandering by children during the development of the topic. Thought-provoking questions which guide and stimulate children in the solution of their problems are dependent upon the aim which has been established and upon the organization of material which it is desired to follow in the solution of the problem. One might as well deny the need of organizing material, as to question the value of preparing a few pivotal questions as a part of the plan.

Lessons often fail because the ground covered during the period cannot be retraced by the children at the end of the exercise. In a well-organized plan the teacher will provide for summaries as each main point is covered. In general these summaries should aim to recall the subject matter covered from the beginning of the lesson. It may be suggested that any good teacher summarizes her work as she passes from point to point in her teaching, and that no artificial reminder is necessary. The difficulty is that a good summary is not accomplished merely by asking for a recapitulation of the material covered. The skillful teacher puts her question which involves a summary in such form that the pupils get a new view of the ground already covered. In the experience of the writer, questions which involve a summary of the work covered, with the added element of a new view as a stimulus to further thought on the subject, are more rare than good questions introducing new topics.

A good plan will include a list of illustrations, illustrative material, books including references to chapter or page, maps

or charts which are to be consulted during the recitation. Teacher and children are often disappointed because of the lack of materials which could have been at hand had the teacher only thought about the lesson before teaching it. In like manner, the opportunities for motor expression, other than reciting or discussing, should be noted in the plan. Dramatization, constructive work, graphic representation at the seat or on the blackboard, may make the difference between success and failure in a recitation.

A lesson which has been well planned will naturally end in the assignment of work to be done in preparation for the next recitation. In the discussion of any problem there must arise questions which cannot then be answered. A good lesson is characterized not simply by the ability of children to report progress, but quite as much by their statement of the questions still unanswered. The direction sometimes given to call up again the question which is left unanswered during the recitation indicates a teacher whose assignments provide a real stimulus for study in preparation for the next day's work. If it is necessary to have a live problem before children during the recitation conducted by the teacher, obviously it is much more necessary to make assignments which involve real issues for children to meet.

In outline form the discussion of plan making given above would appear as given below. This lesson on plan making may be taken as an illustration of the type of plan a teacher should prepare for a development lesson. In this plan, as in others, it seems wise to keep the subject matter separate from the method of procedure.

A plan for teaching lesson plans: Their importance and the elements which enter into their composition.

Teacher's aim: To show the importance of plan making and to indicate the elements which enter into the construction of a good plan.

Preparation (which aims to get the problem before the class).

How do you prepare for your day's work? Do you think you would do better work if you planned your several recitations somewhat systematically?

Pupil's aim: Why do I need to make plans, and what are the elements of a good plan?

Subject Matter	Method of Procedure
I. Necessity for planning.	Do you ever grow tired of teaching the same subject over and over again?
A. Lack of interest in old work.	Why does a sermon out of the "barrel" lack in interest or power to inspire?
B. Subject matter changes.	Do you know a subject thoroughly to-day because you once studied it?
a. Subjects grow.	Why do different groups of children respond differently to the same material?
b. The experiences of different groups of children vary.	Formulate three good questions which you might use in teaching a lesson on the oak tree to second-grade children.
C. Not safe to depend upon the inspiration of the moment for	Do you think you might have asked better questions if you had had time to think them over?
a. Good questions.	What picture or other illustrative material would you use in teaching this lesson?
b. Illustrations and illustrative material.	Do you think the children would gain by drawing a picture of the oak near by?
c. References to books or magazines.	When do you think you will have had enough experience in teaching to be able to get along without making plans?
d. Plans for constructive work and the like.	
II. The elements in a good plan.	(The questions in this part of

A. A thoroughgoing knowledge of the subject matter.

B. The organization of material depends upon the problem to be solved by the children, hence the necessity for discovering a problem to the pupils which can be satisfied by the subject matter to be presented.

a. Problems essential to thinking.

b. Logical *vs.* the psychological organization of material.

c. Organization involves sequence and the subordination of less important points.

McMurry, *How to Study*, Chapter III.

C. Pivotal questions.

a. Thought-provoking questions prepared in advance in order to guide the children in the development of the topic as well as to stimulate them to their best thinking.

D. Provision for summaries.

a. A summary enables children to keep sequence and gives new point of view.

E. Illustrative material, and

the plan will be few. I should expect questions, suggestions, and discussions on the part of the class. I should probably use the blackboard to show the organization of subject matter as given under subject matter.)

What would you do first, if I asked you to teach a lesson on habit formation?

What will determine the organization of the material which you are to present?

One cannot prepare all of the questions to be asked in advance. What is the function of those questions which should be placed in the plan?

When children have been interested throughout the lesson, why are they sometimes unable to solve for themselves the problem which has been discussed?

What aids does a teacher need

references noted on the plan.

a. Materials prepared ahead of time.

b. References to maps, charts, books indicated definitely to save time and conserve interest.

to use in teaching a lesson other than the textbook and her own plan?

F. Provision for assignments.

a. A good lesson makes provision for definite progress and makes clear the questions yet unsolved.

What do you do with questions which are not answered during the recitation?

b. Children need definite problems more when working by themselves at home than when with the teacher.

How do you prepare children to work at their seats, or at home?

Show class plans found in McMurry, *Method of the Recitation*, pp. 329–339; Third Yearbook, National Society for the Scientific Study of Education, pp. 60–64; syllabus on *Theory and Practice of Teaching*, pp. 14–18.

Is plan making worth the time and energy which it requires?

A PLAN FOR TEACHING THE TOPIC OF IRRIGATION [1]

Teacher's aim: To arouse or increase the interest of children in the development of the western part of the United States, and to acquaint them with the problems of irrigation.

What effect would a long drought in this part of our country have upon the price of fruits and vegetables? What would happen if the drought were to be continuous? There are arid regions in the United States. Can they be made to raise good crops?

[1] Adapted from a plan prepared by Lida B. Earhart, Ph.D., for the author's syllabus on *Theory and Practice of Teaching*.

Pupil's aim: Can the arid regions of the United States be made to raise good crops? What effect would that have on the other parts of the country?

Subject Matter	Method of Procedure
I. Arid regions of the United States.	In what parts of the United States are the arid regions located?
A. Continuous drought.	Look at your rainfall maps.
B. Size of area. See maps.	Name the states included.
C. Description of region. Dodge, *Adv. Geog.*, pp. 44. Tarr and McMurry, second book, p. 120.	Compare the population of the plateau states with a like area in the Mississippi Valley, or on the Atlantic coast.
II. Why should we desire to reclaim arid lands?	Is it significant to the country as a whole that these regions remain unproductive?
A. Increase in population with consequent increased demands for food at home and abroad.	
B. Capital seeks a good investment.	What would be the effects produced in case these large tracts of land could be brought under cultivation?
III. How arid regions are made productive.	
A. Conditions necessary for plant growth.	In order that plants in the garden or crops in the field may grow, what conditions are necessary?
a. Fertile soil.	
b. Heat and light.	
c. Moisture.	
B. The effect of drought overcome.	When the lawns or gardens in our part of the country grow too dry, how are they kept growing? What means must be employed to provide water in very large areas? Are these means used in the Plateau and Pacific states? (Class consult the references named.)
a. In limited areas — by sprinkling.	
b. In extensive areas — by irrigation.	
Tarr and McMurry, p. 120. Dodge, *Adv. Geog.*, p. 166. King, *Adv. Geog.*, pp. 141–146.	

C. Sources of water supply.

a. Rivers.

b. Mountain streams fed by rain, snow, or glaciers.

c. Artesian wells.

d. Lakes.

Tarr and McMurry, pp. 129–133.
Dodge, *Adv. Geog.*, p. 172.
King, *Adv. Geog.*, p. 142.
Review of Reviews, 31 : 701–704.

Where can the water be obtained for irrigating purposes in these dry areas?

(Conversation. Assignment to books in use by all of the class. Assign article in *Review of Reviews*, 31 : 701–704, to a pupil as a special topic.)

D. The process of irrigation.

a. Water storage, reservoirs, dams.

b. Ditches or canals.

c. Surface irrigation.

d. Subirrigation.

See geographies quoted under *C*, above.

Popular Science Monthly, 67 : 648–686.

How can the supply of water which falls during the rainy season be kept for use during the dry season?

(Assignment of special topics relating to particular subjects.)

How is the water in the reservoirs or rivers distributed to the fields when it is needed?

(Illustrate by an outdoor lesson; or if the nature of the country is not suited to illustrate the process, use the sand table and construct a system of irrigation showing reservoir, main canals, and the distributing ditches. Assign subirrigation as a special topic.)

E. The reclamation service.

a. The nature of its work.

b. The territory affected.

(See the *World's Work*, Dec., 1907.)

How does the United States government aid in reclaiming the waste lands of the West?

F. How the government gets its money back.

a. Sale of land in tracts not exceeding 160 acres to an individual.

What disposition does the government make of the reclaimed lands?

b. Payment in ten equal annual installments.

Ref. the *Cosmopolitan*, 37 : 715–722.

The *World's Work*, Dec., 1907.

G. The effects of irrigation.

a. Upon agriculture.

(See geographies quoted above; also the *Cosmopolitan*, 37 : 718–722; the *World's Work*, Dec., 1907.)

b. Upon secondary industries.

c. Upon population in the areas irrigated.

(King, *Adv. Geog.*, pp. 152–154; also other geographies quoted above; the *World's Work*, Dec., 1907.)

Would it pay a man to buy a forty-acre tract in the irrigated region? What crops could he produce? Value of crops? (Estimated.) Where there are prosperous farming communities, what other industries are possible? Are they found in the irrigated districts? With agriculture, fruit growing, and other industries made possible and profitable, what effect is produced upon immigration to the Western states? What problems did we set out to solve in these lessons on irrigation? What is the answer to each?

Further topics for class study: —

1. Value of forests to systems of irrigation.

2. Our relations to the irrigated regions.

3. Advisability of introducing irrigation in the Eastern states.

4. Irrigation in Egypt.

5. Irrigation in India.

Individual assignments: —

1. Economy of water in irrigation.

2. Fruit growing on irrigated land.

3. Advantages and disadvantages of farming in the East and in the West.

4. Relative value to a state of gold mining and of farming.

5. Relation of irrigation in the West to the people of Europe.

6. To the people of the Eastern states.

The plan given above for the topic "irrigation" is typical of many plans which the teacher should make. It indicates the development of the whole topic, which will need the time of several recitations for its complete development. The topics given at the end of the plan for class study and for individual assignment show that the teacher had thought over the problems which might arise as the subject was taught, and that she was ready to make such assignments as the situation demanded from day to day. If such a list of possible assignments has been prepared before the topic is taught, the chances are that the ground will be much more thoroughly covered than would be the case if the teacher trusted to her ability to select an interesting problem at the end of each day's work. Lesson plans should, as a rule, cover a complete unit of work or topic. One plan will commonly include inductive development work in the derivation of principles, drill work to fix these generalizations or to give skill in their application, and at times deductive work in the use of the principles derived to explain new situations. A complete plan for teaching percentage in arithmetic would include all of the elements mentioned. A lesson for appreciation or a recitation lesson may often be followed by drill work. When the topic lesson plan has been prepared, the teacher will need to consider from day to day the best method of proceeding with the subject. She may wish to vary somewhat the approach or order of development.

A PLAN FOR A DRILL LESSON

The work indicated here can be done in one period. The plan is given as an illustration of the principles involved in good drill work. It is especially necessary, in planning for lessons of this type, to be ready to vary the exercises in order to maintain the interest and attention of the class. Repetition with attention is what counts for habit formation. The children have been playing a game in which the score secured by throwing a bean bag in squares, numbered from one to ten, has been multiplied by two and later by three. The class has been divided into sides, and the competition has been keen. They want to make larger scores, and, therefore, have a compelling motive for studying the next table.

Teacher's aim: To teach multiplication by four. If we are to make larger scores, what table must we learn next? How many think they can learn half of the table of fours to-day? If you learn it, we will play our game for ten minutes.

Pupil's aim: To learn the multiplication table of fours.

Subject Matter	Method
$4 \times 4 = 16$ $4 \times 2 = 8$ $4 \times 6 = 24$ $4 \times 3 = 12$ $4 \times 5 = 20$	Teacher writes the table on the blackboard, as indicated under subject matter. How many are sure they know the first two? Look at me and answer as I ask the results. Don't answer unless you are sure. Now let us take the first three. Proceed as before. I'll erase the first three. Look at them carefully. Now write them on your tablets. $4 \times 4 =$ $4 \times 2 =$ $4 \times 6 =$ Don't write the answers unless you are sure you are right.

Let four or five children read their answers.

Margaret may ask for answers. She drills on the first three combinations.

The other two are easy to remember, — four times three we know; it is the same as three times four, and four times five are twenty we can all remember. Look carefully; I am going to erase them.

Drill by teacher on last two combinations.

All combinations put on board again and read and written by children.

Robert tries to discover whether there is any girl who has forgotten any part of the table.

Katharine tries to catch the boys.

All write at the dictation of the teacher, supplying the products.

The game is then played. When any one makes a mistake in recording his score on the blackboard, his side is penalized the amount of his mistake.

Possibly all the plans the experienced teacher needs for the lesson outlined above are a few notes concerning the variations to be introduced from time to time in the drill. She must plan, however, to put zest into the lesson by means of the variety which she introduces, and she must, if she is to get the best work, provide some motive which will make the drill work seem worth while to the children.

A LESSON ESSENTIALLY DEDUCTIVE

A part of a larger topic plan on taxation. The children have begun the study of taxation by inquiring how policemen, street cleaners, firemen, and other city employees are paid; how money is secured to run the schools, to provide water, and the like.

Teacher's aim: To teach how to determine the amount of taxes to be paid when the assessed value of the property and the rate of taxation are known.

George, did you find out the assessed valuation of your father's house and lot?

Henry, did you find the rate on real estate?

Pupil's aim: Let us try to find out how much tax George's father must pay on his house and lot.

Subject Matter	Method of Procedure
A knowledge of percentage is assumed.	If you want to find six per cent of $3500, how do you proceed?
To find the percentage we multiply the base by the rate.	If George's father pays $1.80 on each hundred dollars, how can you tell how much he must pay on thirty-five hundred dollars?
House is worth $3500. Rate of taxation is $1.80 on the hundred dollars. $1.80 on one hundred dollars 35 times $1.80 would be the 900 amount due on thirty-five 540 hundred. $63.00	Do you discover in this example anything like the problems in which you find a certain per cent of a given sum?
Taxation is simply an application of percentage.	Find .018 ($1\frac{8}{10}$ per cent) of $3500. If you multiply the assessed value by the rate, will you get the amount of the tax? Why must you point off two places? Do you think you can find the amount of the tax to be paid on any house and lot in the city, if I tell you how much the assessed value of the house is?

Houses worth $4,250
$18,400
$1,260
$1,500
$7,500
$800
$12,000

How much tax must each pay?

Is the rate of taxation the same on all houses?

Teacher gives problems to the whole class and has each explained in turn on the board.

For to-morrow you may solve the following problems (written on the board): —

Assessed Value	Rate of Taxation
$4,200	$2.20
$16,750	$1.35
$425,000	$1.90
$1,000	$0.78
$56,000	$1.64
$400	$2.18

PLAN FOR A SERIES OF TOPICS IN HISTORY — SIXTH GRADE

A plan covering the work for several weeks given in the form of a topical outline with suggestions as to methods of treatment. This general plan would need to be supplemented by definite additional preparation from day to day. This plan was prepared by Miss Lida Lee Tall, supervisor of grammar grades, Baltimore County, Maryland.

Aim: To teach the colonization of Maryland and show its development as a part of England's colonial empire in the New World.

Topical Outline (for the Teacher)

I. Conditions in Europe at the time of the settlement of Maryland.
II. Conditions in the New World.
III. Life of George Calvert.
  a. In England.
  b. In the New World.

IV. The settlement of Maryland.
V. The development of Maryland.

Textbooks

Any good history of England, as Walker's, Gardiner's, or Andrews'.
Warren. Stories from English History.
Harding. Stories of the English.
Mowry. First Steps in the History of England.
Browne. Maryland: the History of a Palatinate.
Cheyney. European Background of American History.
Cheyney. A Short History of England.
Hall. Lords Baltimore and the Maryland Palatinate.
Gambrill. Leading Events of Maryland History (class text).
Coman and Kendall. History of England.

TOPIC I: CONDITIONS IN EUROPE IN THE SEVENTEENTH CENTURY

Subject Matter	Method of Procedure
1. Monarch. King James. 2. Incidents of the reign that will help interpret the life of the times: Controversies { Religious, Political, Commercial. 3. Character of the King { vain, arrogant, weak, amiable, loved peace at all costs, ambitious, approved learning	Much of the work can be developed from assigned readings for which the pupils must be held responsible. Where textbooks are not available the teacher, or a pupil who reads well, may read to the class. Of course, the assignment must be very definite. For example: *a.* As you read see if you can tell from incidents in the story the kind of man King James must have been. You must argue for what you think about him. *b.* England was interested particularly in Spain, Holland, France, and the New World.

4. Men of England
   - Sir Walter Raleigh.
   - Sir Robert Cecil
   - George Calvert
   - Cromwell
   - Guy Fawkes
   - Robert Carr
   - Francis Bacon
5. Reason for England's interest in other countries:
   - *a.* Trade.
   - *b.* Spain's success in colonization in the New World.
   - *c.* Spain's usurpation of Holland.
   - *d.* Increase in woolen manufacture in England.
6. Topics of the day at the English court:
   - *a.* Spanish king and his power.
   - *b.* Spanish resources.
   - *c.* New World.
   - *d.* Religion.
   - *e.* England's trading companies
     - Stock companies.
     - Proprietary privileges.

As you read find out why this was so.

Half the class may be given the first assignment, the other half the second.

When, at the close of the study period, the teacher calls for the work, it will be through her sequence of questions that the subject matter will be organized according to the outline under "Subject Matter." If the discussions are lively and argumentative, the spirit of the seventeenth century will be felt and the life of the time pictured. Pictures of castles, London streets, Ireland, the continent, sea vessels, etc., will help to make impressions more vivid. Topic 6 makes a good summary and can be conducted in a way to make the work most attractive to the pupils.

TOPIC II: CONDITIONS IN THE NEW WORLD

Subject Matter

1. Spanish America.
2. French America.
3. English and Dutch America.

Method of Procedure

Assign readings from available textbooks.

A further assignment which cor-

relates with geography is the following: Draw a map of the world; show Old World; show New World; color the part of the New World that belonged to Spain, to France. Also draw a map of Europe; show the Catholic countries, show the Protestant countries.

As the teacher develops the lesson from the class, by means of thought-provoking questions, she can make an outline on the board, the class helping; then this outline may be copied by the pupils in notebooks used for history lessons only. These outlines should serve as summaries and also as reviews as the lessons continue.

TOPIC III: LIFE OF GEORGE CALVERT

Subject Matter	Method of Procedure
1. George Calvert in England at this time.	1. Assigned reading for class: Gambrill, pp. 3–6.
a. Early life:	Teacher may fill in with details from Browne's *Maryland*, or Hall's *Lords Baltimore and the Palatinate*. Much of this, however, may be developed. By this time the class will have been put into a mental attitude, both historically and geographically, to answer problems very intelligently.
Born in Yorkshire (locate).	
Educated at Oxford (picture of school).	
Traveled on the Continent (map showing university towns).	
b. Later life:	
Important position in England.	
Interests in the New World: Trade: religion.	Assignment for map work: A map of England — locate Yorkshire, Oxford, London.

2. George Calvert. In the New World:
   a. Newfoundland.
   Management.
   Difficulties encountered { Climate / Soil / The French }
   Disappointment and departure.
   b. In Virginia
   Reception unwelcome because of religion, charter troubles, business relations.
   Result.
3. His return to England.
   New charter from Charles I.
   Death of George Calvert.

A map of Europe showing George Calvert's travels on the Continent.

2. (*a*) Draw a map of the New World showing Newfoundland and other settlements of that time.
   Why was Newfoundland bought?
   (*b*) Why in Virginia and not Plymouth?
3. Textbook assignment.

TOPIC IV: THE SETTLEMENT OF MARYLAND

SUBJECT MATTER

1. Cecilius Calvert — To carry out his father's plan of making a settlement in the New World.
   a. Conditions of the new charter. (Gambrill, pp. 6–8.)
   (*a*) Rights and duties of the proprietor.
   (*b*) Rights and duties of the colonists.
   Kind of man necessary to rule the colony wisely.

METHOD OF PROCEDURE

1. Assigned reading: Gambrill, pp. 6–8.

As has been indicated, where no problem development is possible, use textbooks or the teacher's wealth of details to fill in the connecting links. The texts should be read just when the need for the information arises: for instance, when it is necessary to know the conditions of the charter granted to Cecilius Calvert, the books should be opened, the page found, the page or paragraph read silently by the class, and the information then given.

b. Preparation for the trip:

- Difficulties
  - Hostility of the old London Co.
  - Objections to the charter by Claiborne.
- Getting ready at Gravesend
  - The *Ark*.
  - The *Dove*, Nov., 1633.
- Men for the expedition
  - Men bound to service (probably Protestants), 300.
  - Freemen (probably Catholics), 20; priests, 2.
  - Members of the Calvert family.

Stop at the Isle of Wight.
Off for the voyage.

2. The voyage.

a. The stop at the Barbadoes. (It is necessary that the class understand something of England's colonial territory at the time: England colonized Barbadoes in 1625, after it had been depopulated by the Spanish. The island had, therefore, been under English control for eight years. It was possible that

If the previous situations have been vividly presented, then the problem of the difficulties of getting such a trip under way that confronted Cecilius Calvert should be eagerly discussed by the class. There can be map work — England: locate Gravesend, Isle of Wight; also make the flag of England under which the expedition sailed. (The flag of 1608 was the united flag of England and Scotland, the flag of St. George and St. Andrew combined. Lord Baltimore's own banner can be made and colored, though it was not known to have been used until the battle of Severn; it was adopted as the state flag in 1904.)

2. The voyage can be treated as a recall of the knowledge gained from the celebration of a holiday like Maryland Day in a previous grade, or an outline map may be drawn and pupils may trace the route if they can.

(More map work can follow to indicate the stop at the Barbadoes, the route up the Atlantic to Old Point Comfort, another stop, and on to Blackiston Island.)

a. Why was a stop at the Barbadoes planned?

b. Why was a stop at Point Comfort planned?

3, 4, 5, 6. From the landing on Blackiston Island to the end of this topic the

the *Ark* and the *Dove* carried mail for the Barbadoes. The colonists stopped for three weeks, in that time repairing the vessels, securing negro slaves, and buying supplies, among which was seed corn for the Maryland settlement.)

b. The stop at Point Comfort. — Letters from Cecilius Calvert and the king were to be delivered with great respect, by the hands of a messenger who was comformable to the Church of England, to Sir John Harvie, the governor of the Virginias.

3. The landing on Blackiston's Island, March 25, 1634. Why not a suitable place for a permanent settlement?

4. The visit to the Pascataway Indians. The sale of the Yaocomaco Village. The advantages of such an arrangement with native Indians.

5. The settlement on St. George's Creek, afterward known as St. Mary's

method followed should be: developing questions, with the use of a textbook which should be read either before the lesson or after the development in order to verify conclusions made; but this must be left to the judgment of the teacher and her own individual plan for dealing with the subject. Assigned reading: Gambrill, pp. 17–19.

7. For the life in the colonies, reading periods may be occupied with readings from any good book that gives a graphic account of the times, such as Alice Morse Earle's *Home Life in the Colonies*. If the sand table is used, the children should consult these books. Another way to vary the procedure, if there are books enough, is to assign readings and let the pupils bring to the class accounts of the details of the life in the colonies that seemed most interesting to them individually.

In the Affairs of Interest it will be necessary for the teacher to tell about the conditions in England. Mowry, Guerber, or

Creek. The settlement was named Augusta Carolina.

6. The favorable conditions of the settlement.
   a. Spring of the year.
   b. Houses of the Indians (log) could be occupied temporarily by the settlers while deciding upon sites for building.
   c. Aid of friendly Indians:
      1. Routes through the country.
      2. Protection.
      3. Education — corn planting, harvesting, clipping tobacco, hunting game, fishing, climate.
      4. Land was already cleared and cultivated.
   d. Condition of plantation grants:
      A man with five persons — 2000 acres.
      A man with less than five — 100 acres for self; 100 acres for wife; 100 acres for each child under sixteen years; 100 acres for each servant; 100 acres for each laborer.
   e. Physical features of country for tobacco industry:

Warren may have all the information necessary for this purpose, but Cheyney's *European Background of American History* should be studied by the teacher. The European background can be very simply drawn.

The Kent Island affair may be read before being discussed, but there is good problem work there, and the better plan would be to read the text last. *Text:* Gambrill, pp. 21–25, 99–111.

References:

Tudor Jenks, *When America was New.*
Chap. IV, "Maryland and the Dutch."
Chap. V, "New World Living."
Chap. IX, "What the Colonists Knew and Thought."

Wm. H. Browne, *Maryland, The History of a Palatinate.*

Alice Morse Earle, *Home Life in Colonial Days.*
The chapters on Virginia plantation life will serve to show the life in Maryland colony also. The material is as follows: Light, Kitchen, Fireside, Serving Meals, Food of Forest and Sea, Indian Corn, Meat and Drink,

Tide water.
Estuaries — wharves for each plantation.

7. Life in the colony:

a. Plantation — extent,
sheds for drying tobacco,
slave quarters,
barns,
rolling roads,
chapel,
house.

b. Food — wild turkey,
venison,
oysters
hominy,
corn pone.

c. Amusements — hunting,
dancing,
singing by slaves.

d. Travel — boats,
horse.

e. Affairs of interest — Virginia news.
Claiborne's trading post in the Chesapeake.
Relations with the Indians.
English politics (Charles I, Cromwell, and Parliament.)
Military arrangements in the settlement.
Currency for trading.
Need for an assembly to settle matters in a legal way.

f. First Assembly — 1635.
Matters taken up — Boundaries,
Flax Culture, Wool Culture and Spinning, Girls' Occupation, Dress of the Colonists, Jack-knife Industries, Travel, Transportation and Taverns, Colonial Neighborliness, Sunday, Oldtime Flower Gardens.

Military protection,
Claiborne trouble,
Framing laws to be sent to Cecilius Calvert, the proprietor in England.

g. Sending back these laws; also letters, and products, as well as the two Indian arrows required by the king.
An interesting account of the arrival and departure of the trading ships can be given. They came from November to January, and the captains were entertained at the different plantations. They brought new settlers, indentured servants, more slaves, letters from England, news of the world.

h. Trouble in the colony.
Claiborne on Kent Island.
Virginia's hostility.
Troubles with the Indians — Susquehannoughs and Pocomokes.
Civil War in England.

h. Text-book assignment: Gambrill, pp. 27–30, 34–47.

TOPIC V: DEVELOPMENT OF THE COUNTRY AND REPRESENTATIVE GOVERNMENT

Subject Matter	Method of Procedure
1. Assemblies — First Assembly in 1635. Second Assembly in 1638. Why three years later than first?	1. Discuss the organization of the several assemblies. Explain hundreds. Text-book: Gambrill, pp. 14–19; penal laws; prisons, 21–23; judicial courts, 63–68.

What was its organization? Freemen, governor, and Council. Importance.

Third Assembly in 1659.

Representatives from the hundreds making a House of Burgesses, governor, and Council.

2. The Claiborne affair and its settlement.

3. The effect of the Civil War in England upon the colonies:

a. Colonies in general:

1. Increase or decrease in population according to the sentiments of the colonists regarding the questions in England.

2. Strife in colonies. Councils called on to decide for or against king or Parliament.

3. Effect on commerce.

b. Upon Maryland in particular:

1. Increase in Catholic population.

2. Caused strife and dissension.

3. Return of Leonard Calvert to England for advice; Giles Brent left governor *pro tem.*

4. Invasion of Ingle.

5. Ingle and Claiborne.

2, 3, 4, 5, 6, 7, 8. Text-book Assignments: To be given by teacher.

6. Leonard Calvert's return from England.
7. Leonard Calvert's refuge in Virginia.
8. Return of Calvert and restoration of the colony under his government.
9. Death of Leonard Calvert, June 9, 1647.
   Thomas Greene made governor *pro tem.* by Leonard Calvert on his deathbed.

4. The appointing of a new governor by the proprietor and the reorganization of the government: Factor in this — Civil War; the Protestants in power in England.
   1. William Stone appointed governor.
      Effect — he chose Protestants for his Council, from those brought into Maryland from Virginia.
      They made a settlement on Severn River.
5. Trouble with the Puritans resulting in the battle of the Severn.
6. Reconcilement with Virginia.
7. Change in organization of government —
   Upper House.
   Lower House.
   Due to growth of colony;

freemen; indentured slaves who became freemen.	
8. Removal of the capital to Annapolis.	8. For "Life in Annapolis" see Churchill's *Richard Carvel:* Chapter on "Christmas at Carvel Hall." This should be read to the class.

NOTE. — Here the development of the Maryland colony may be closed because of the political difficulties which are entirely beyond the experience of the sixth-year child. The French and Indian Wars might be studied; also the opening up of western Maryland by the coming of the Germans; but the main point has been accomplished. The children have worked their way through the study by living in the conditions of the colony and solving Leonard Calvert's problems for him. To work such a plan out in detail, to give just enough to whet the appetite of the child and then make him think for himself, to have him live as a colonist of the times, interested particularly in the details of government that concern the colonists as a united body until finally a "two house" legislature is demanded because of the growth in population, area occupied, and interests represented, is a task for the skill of the teacher, and is worth while.

LIDA LEE TALL,
Baltimore County Schools.

A LESSON IN NATURE STUDY INVOLVING A REAL PROBLEM

This lesson was planned and taught very successfully in the third grade by Miss Roxana A. Steele of the Speyer School, Teachers College, Columbia University.

Teacher's aims: —

1. To teach pupils why and how to transplant.
2. To prepare for the transplanting of the salvia plants in our school garden.

Pupil's aims:

1. To be able to select good plants for transplanting.
2. To know how to transplant in order to plant salvia plants without help.

Subject Matter	Method of Procedure
Box of young salvia plants for observation and comparison with cabbage and tomato plants. (Salvia plants to be transplanted into garden later.) *Advantages of transplanting:* Plants get an early start. Opportunity for good arrangement. *Disadvantages:* Extra work. Extra care.	What are we planning to do with our salvia plants when they are a little larger? Why didn't we plant the salvia seeds in the garden? What are some of the advantages of transplanting? disadvantages?
	How many children feel that they know just the best way to transfer a plant? (Pupils' Aim.) Do you think we can afford to practice with the salvia plants when we have so few? Who can suggest a good way to learn to transplant?
Cabbage and tomato plants discarded by Teachers College gardener.	Let us look at those cabbage and tomato plants which I have brought from Teachers College and see what we think about them. These are from the box from which plants were selected by the gardener last week.
I. Choice of Plants. Very small plants: Do not root well. Are slow in getting started.	
Large plants: Stalks too long and weak. Bend very easily. If used, need to be planted deep. Roots have not had room enough in hotbed.	I shall divide the plants into small, large, and medium-sized. Tell which you think are best for transplanting and why. Why would you not select the very small ones? the very large ones?
Medium-sized, strong plants: Best for planting. Good roots. Good stalk. Green leaves.	When a gardener has not enough fine, straight plants, can you think of a way of planting by which he might use a crooked plant?

Crooked plants.
Can be straightened by the sun.

Now that we know *what kind* of a plant to select, can you think of something else we must learn before we are ready to transplant our salvia plants?

(Statement of Pupils' Aim.)

II. Manner of Planting.
Preparation of hole.
Water at roots.
Planted deep enough for branching of first leaves to be but an inch or two above ground.
Earth pressed firmly around plant.

Can you think of some things which might help a very young plant to get a good start?

Has any child ever seen a farmer plant cabbage or tomato plants? Tell us exactly how he did it and why.

Practice planting of cabbage and tomato plants in a box of earth.
Trowel.
Choice of plant.
Water.
Account of what is being done.

Several children who can select a good plant may plant them in this box of earth. The class will decide whether they are good gardeners.

Each child will have an opportunity to plant a salvia plant in the garden. Can you tell which plants will be most liable to grow well?

Summary.
How to select a plant for transplanting.
How to plant it.

A LESSON PLAN IN GEOGRAPHY WHICH IS PREDOMINANTLY DEDUCTIVE

The study of maps forms the basis for inferences which are later verified by referring to the text. This plan was written by Miss Mary F. Kirchwey of the Horace Mann School, Teachers College, Columbia University. This lesson was most successfully taught to sixth-grade pupils in the Horace Mann School.

Teacher's aim: To teach the geography of India and to give practice in the application of principles of geography known by the pupils.

Children's aim: Why do they have such terrible famines in India?

Subject Matter	Method of Procedure
	What is a famine? Sufficient conversation to impress upon the children the suffering attendant upon famine.
Failure of crops — dense population directly dependent upon agriculture for a living — lack of sufficient means of transportation.	What are some of the conditions that bring about a famine?
We have abundant rainfall — temperature favorable to crops — great land area in proportion to our population.	Have you ever heard of famines in our country? Why not?
In Egypt — even as far back as in the days of Joseph (Bible) — also in recent years.	In what part of the world have you heard of famines?
Nile's overflow less abundant than usual — dense population.	What were some of the causes of famine in Egypt?
	The Indus Valley in India is one of the regions that is subject to terrible famines. Let us see if we can find the reason for it.
Location and approximate extent of the Indus Valley.	Point out the Indus on the map. Where does it rise? Where empty? Draw your pointer along the length of the valley — across it.
Between latitudes 23° and 30° N. the temperature is warm.	In what latitude is it?
Florida is in about the same latitude, but the extremes of temperature are not so great owing to the water mass that surrounds it and tempers both heat and cold.	What temperature conditions must prevail there? What part of North America is in about the same latitude? What do you know about the temperature of Florida? Do you think that the Indus Valley has about the same temperature? Look carefully at

the location of both places — Florida and the Indus Valley. Can you see any reason for thinking that temperature is not the same? How are the summer and winter temperatures of Florida affected by the waters about it? How are the summer and winter temperatures of the Indus Valley affected by the land mass about it?

Isothermal maps for January and July verify the class conclusions.

Find out whether your conclusions are right.

	Jan.	July.
Indus Valley,	40°–60°	90°
Florida	50°–60°	80°

Is the temperature of Florida favorable or unfavorable to crops?

Is a temperature somewhat hotter in summer and colder in winter unfavorable to crops?

Is there anything, then, in the temperature of the Indus Valley that explains their famines?

Rainfall.

We must evidently look for some other cause for the famines. Upon what other climatic conditions do crops depend?

Indus Valley is in the trade wind belt.

In what wind belt does the Indus Valley lie?

North of the equator the trades blow from the northeast.

From what general direction do the trades blow in the northern hemisphere?

The air over the land becomes heated and expands. The cooler air from the water blows in.

Let us see if there is ever any exception to this rule. How does the temperature of the land compare with the temperature of the water in summer? What effect has this upon the air over the land? What naturally follows?

From a general southerly direction.

Arrows on map show that the winds come from the southwest.

From what direction, then, do the winds blow in India?

Turn to the map of the winds and find the exact direction. These winds are called the *Southwest Monsoons*.

From the northeast in winter.
From the southwest in summer.

Tell again from what direction the winds of India come.

There can be practically no rainfall in the Indus Valley in winter because the winds blow over the great land mass of eastern and south-central Asia before reaching the Indus and have lost their moisture.

There is more rainfall in summer because the winds from the southwest come directly from the ocean. The valley lies so low, however, that the winds sweep over the southern part of it without having much of their moisture condensed. There is little condensation until they near the highlands on the north.

What, then, do you conclude as to the rainfall of the Indus Valley in winter? Is there apt to be more or less rainfall in summer? Why? Look at the map very carefully and see if it is likely that even the summer winds bring much rainfall. Is the rainfall equally light all through the valley? Where is it apt to be heaviest? Why?

Refer to rainfall maps which show well-watered regions in the upper valley — desert in the lower.

Prove that your conclusions are correct.

Generally favorable in the upper valley — unfavorable in the lower.

Would you then say that the rainfall is favorable or unfavorable for agriculture?

Does this mean, necessarily, that agriculture cannot be carried on in the lower valley?

The Nile Valley — Egypt.

What other river valley have you studied that is noted for its agriculture in spite of a very light rainfall?

The annual overflow of the river.

What makes agriculture possible in the Nile Valley?

The heavy precipitation in the mountainous districts that feed its tributaries.

To what is the overflow of the Nile due?

Indus has many tributaries that rise in the Himalayas. In the summer, when the snows on the mountains melt, these tributaries carry to the main stream such a quantity of water that an inundation results.

Is there anything in the location of the Indus that makes it likely that it, too, overflows?

Overflow is less and a correspondingly smaller area productive.

What is the result if the rainfall is less abundant than usual?

Character of the soil.

Upon what beside temperature and rainfall does the productiveness of a region depend?

River valleys in general have a rich soil. A river that overflows leaves a deposit of rich mud that makes its banks very fertile.

Can you come to any conclusion in regard to the soil of the Indus Valley?

Favorable — warm climate, rich soil, overflow of the river.
Unfavorable — scanty rainfall.

State again the conditions in the valley that are favorable to agriculture. Those that are unfavorable.

Crops grow so rapidly and easily when rains do not fail, that vast numbers of the people engage in farming. It is almost purely an agricultural region.

What has been the effect of these physical conditions upon the occupations of the people?

It has attracted vast numbers of people.

What has been their effect upon the density of population?

Principal products — millet, rice, cotton, sugar cane, wheat, tea.

What crops would you expect to find in the Indus Valley? Consult your textbooks and see what else is grown there.

Practically all needed for home consumption.

Do you think that much is exported? Why, then, do they have such terrible famines in India?

More railroads might be built

Can you suggest anything that

in order that food products could be carried readily from one section to another.

Better methods of irrigation might be employed.

More variety of occupation might be introduced, so that fewer people would be directly dependent upon agriculture for a living.

might be done to lessen the danger of famine?

Consult your textbooks and see what steps have already been taken in this direction.

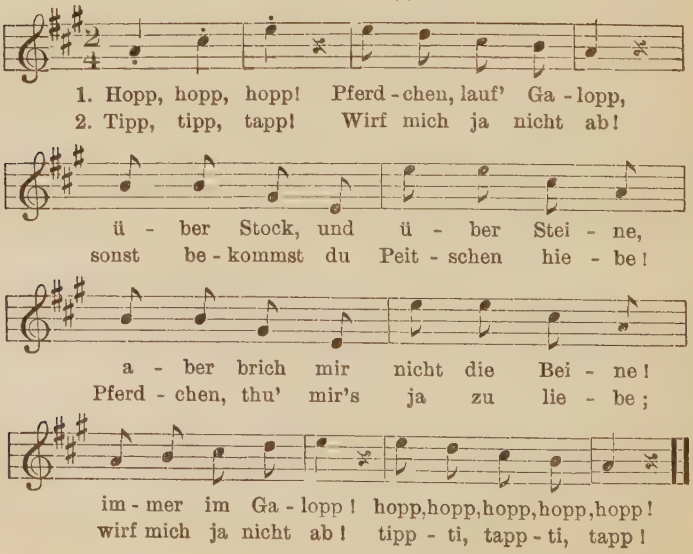
A LESSON FOR APPRECIATION

A lesson for appreciation which includes creative and interpretative work. The interpretation of the song in the dance, or dramatic game.

This lesson was planned and taught to a group of second-grade children by Miss Eleanor Wright of the Speyer School, Teachers College, Columbia University.

The lesson was based upon the little German folk song which follows: —

Das Steckenpferd


1. Hopp, hopp, hopp! Pferd - chen, lauf' Ga - lopp,
2. Tipp, tipp, tapp! Wirf mich ja nicht ab!
ü - ber Stock, und ü - ber Stei - ne,
sonst be - kommst du Peit - schen hie - be!
a - ber brich mir nicht die Bei - ne!
Pferd - chen, thu' mir's ja zu lie - be;
im - mer im Ga - lopp! hopp,hopp,hopp,hopp,hopp!
wirf mich ja nicht ab! tipp - ti, tapp - ti, tapp!

Teacher's aims: —

1. To have the children make a dance which will be suitable to the music of *Das Steckenpferd.*

2. To help the children to appreciate this form of self-expression, — expression by means of the whole body.

Pupils' aim: —

To make a little "folk dance" which they will present at the May Festival for the entertainment of parents and friends.

Subject Matter	Method of Procedure
I. *A.* Getting the problem before the children.	I. *A.* 1. Do you remember, children, that I promised you a great surprise this morning? Well, this is it.
1. The surprise.	
2. Reason for doing this work.	2. One day, not long ago, Miss S., Miss T., and I were talking over our program for the May Festival, and we decided that the little people did not have enough to do. The first-grade children are to play a little story, and our two grades, you know, are to sing *The Little Princess* — so we thought that the second grade ought to have a little part of its own. Now what do you think it is to be? I am going to tell you.
3. Nature of the problem.	3. We are going to make our own little dance to the music of *Das Pferdchen.* Don't you think that will be very interesting?

B. 1. Set the standard for judging the value of the work done: that is, to have the dance tell the same story as the music.

1. When we made the tunes for our songs last winter, what did the music always have to tell?

Just so, as we make our dance to-day, it must tell the same story as the folk song.

2. Consider some other familiar melodies, and show, in physical expression, what they tell.

2. Let us sing one of our little songs that we have known for a long time, and see if we can tell, in a dance, how that makes us feel.

a. Soldier Song.
(Bentley Song Primer.)

Different children may here give different, individual interpretations. Encourage much freedom.

b. Bye-Low.
(Bentley Song Primer.)

I am thinking of another tune that is quite different from this one. You may sing it with me if you like.

Virginia may show us how that song makes her feel: what she wishes to do when she hears it.

c. Old Black Joe.

d. Robin Hood and Little John.

(Handle these two songs in a manner similar to that used for the other two.)

C. Choose those pupils to interpret a song to whom it seems to appeal most.

1. *Soldier Song* — boys.
2. *Bye-Low* — girls.
3. *Robin Hood* — partners.

I am going to choose James to dance this, for he knows so much about soldiers.

Whom do you think could best show us how *Bye-Low* "goes"? Yes, I believe the girls can.

Henry may choose a little boy and girl to show us how this tune (*Robin Hood*) seems to go.

II. *A. Das Pferdchen.*

II. *A.* Our little song, *Das Pferdchen*, is very different from all these.

Let us sing it together, to "*la.*"

1. Kind of song — gay.

1. What kind of song do you think it is? How does it make you feel?

2. Things a little horse would do.

2. This song is about a little horse. Now what can a little horse do?

a. Gallop.
b. Jump.
c. Trot.
d. Paw the earth.
e. Stamp.
f. Step very high.
g. Carry his head proudly.
h. Prance.

3. Find any or all of these movements in the song.

3. Now we shall sing our song again, and this time you must listen very carefully so that you can tell what *this* little horse does.

4. Analysis of stanzas. First stanza — 3 parts.

a. Jumping.
b. Galloping.
c. Jumping lightly.

4. Is this stanza alike throughout, or are there different parts to it? You may raise your hands when we come to the end of each part. Name each part.

5. Interpretation of each part by several different children.	5. You may show us how that first part makes you feel, Leland. Irving may show us his way of doing it.
6. Criticism.	
a. Suggestions and constructive criticism of work done.	You have seen these two boys work; have you any suggestion to give?
b. Judgment of the class as to the relative values of work.	Which piece of work do you consider more appropriate? Why?
c. Selection made for permanent dance.	Are you willing to accept this for your finished dance?
7. *a.* Analysis of second stanza — 3 movements.	Now we have gotten the movements for our first stanza, we shall see if the second stanza is very like it. How many movements did you hear in it?
b. Contrast the general spirit of first and second stanzas.	*b.* Is the general spirit of the second stanza just like that of the first? Compare?
8. Encourage timid pupils to put forth effort. Have a very weak one work with one who is strong in this line.	Will you not show us, Josephine, how that little horse seems to go, in this second stanza. Now William is a very strong horse, so we shall put you with him and make a fine "team."
III. *A.* 1. Review the whole dance.	III. *A.* 1. Since we have gotten all our dance, in parts, maybe you would like to see some one dance it all the way through.

	Who will be strong enough to do this without any help? We liked that very much.
2. Give the incentive to work upon this until it is a very finished product.	2. But I wonder if you feel ready to give this at the May Festival, just as it is? Why not? What will be necessary, then, before we can feel satisfied with it?
3. Provide for a way of getting on and off the floor, when the dance is given.	3. Now we know how our dance is to go after we have gotten out on the floor, but we have not said how we shall get to and from our places. Don't you think this is very important?
4. Assignment.	4. I am going to ask you to be ready to answer this question on Monday: What will be the most suitable and pleasing way in which to get before our audience; and also, back to our places after our dance has been given.

A LESSON IN ARITHMETIC BASED ON A REAL PROBLEM WHICH WAS INTERESTING TO CHILDREN

Such a lesson gives little opportunity for practice in arithmetical computation, but gives the very best possible motive for the drill work which is to follow. This lesson was planned and taught in the third grade of the Speyer School, Teachers College, Columbia University, by Miss Roxana A. Steele.

Teacher's aims: To have children appreciate the practical value of itemized bills.

To make children conscious of their need for the multiplication table of six.

Pupil's aim: To find the cost of the basket of food to be given to a poor family on Thanksgiving Day.

Subject Matter	Method of Procedure
Thanksgiving baskets are sent annually to the needy families of the neighborhood.	How many children know about the Thanksgiving baskets which are sent from the Speyer School?
Voluntary offerings of money, groceries, help in preparing and distributing.	You may tell the rest of the class how this work is planned for.
An offer to pay for a Thanksgiving basket if the value were estimated.	Miss S. was telling me yesterday that a gentleman offered to pay for one of the baskets, but she did not know the value of one. She said that she knew the different articles which are put into the basket, but did not know the value of each. I thought Grade III could find the cost for her. Would you like to try to do it? (Pupils' Aim.)
List of things for the Thanksgiving basket: 1 squash. 2 cans of vegetables. 3 qt. of potatoes. 2 qt. of apples. 6 lb. of beef. 1 qt. of cranberries. 1 lb. of sugar. 1 lb. of nuts.	Miss S. gave me a list of the things which are to go into the basket. As I put the list on the board try to think of the price of each article. We will choose the average price because our goods will be average goods.
Market list prices: Small squash . . . . 12¢ Large squash . . . . 18¢ Canned vegetables . . 10¢	

Potatoes per qt. . . .	8¢
Apples per qt.	12¢
Cranberries per qt. . .	12¢
Sugar per lb.	6¢
Nuts mixed per lb. . .	18¢
Small squash	12¢
Large squash	18¢
	2)30¢
Medium squash . . .	15¢

How many are ready to tell the price of the squash? How can you find the medium price? You may record the squash. Who can fill in the second line and explain it? Class be ready to criticize.

Same method with the other items except item about meat.

How can we find the cost of 6 lb. of beef at 16¢ a pound?

6 lb. of beef at 16¢ = $.96

Teacher do the multiplying, showing the practical value of the knowledge of the 6 table. Which is the better way and why?

$.16
.16
.16 $.16 a lb.
.16 ×6
.16 $.96 for 6 lb.
.16
$.96

Is there any question before finding the value of the basket as a whole?

Suggestions.

Who can give helpful suggestions to make sure that the answer is correct?

Numbers in straight columns.
Add up and down.
Give proper name to answer.
Board addition.

Checking of results at board by pupil whose work is incorrect.

Papers for Miss S. and the gentleman.
Neat.
Correct.
Good writing.

These three children may choose the two best papers and tell why they select them.

Cost of Thanksgiving basket, $2.15.
Need of 6 table.

What have we found out in today's lesson?

What do you think we ought to do in the arithmetic lesson tomorrow?

(Problem to carry over.)

Aim for next lesson to be expressed by pupils.

We cannot always follow in every detail the plan which we make for a lesson. It is interesting in this connection to read Miss Steele's accurate account of what actually happened when the lesson, as planned above, was taught. The description which follows appeared in the *Atlantic Educational Journal* for November, 1910.

A PRACTICAL LESSON IN ARITHMETIC

By Roxana A. Steele, Speyer School, Teachers College, Columbia University

Pupil's aim: To find the cost of a Thanksgiving dinner.

Teacher's aim: To make children conscious of their needs in arithmetic.

Last fall Grade Three had been studying the wholesale market in industrial work. The wholesale market was compared with the retail market, prices contrasted, etc., and much language and arithmetic work was based upon this work.

A few days before Thanksgiving a gentleman stepped into the school office and offered to pay for one of the Thanksgiving baskets which the school sends out to poor families in the neighborhood. No one seemed to know the exact value of one of the baskets, so Grade Three was asked to make the estimate.

This could have been done by an adult in a few minutes, but it would have been done no more accurately than the children were able to do it after having made a careful study of market lists. The exercise also furnished an excellent child's aim for the arithmetic lesson. The class felt its responsibility and was anxious to do good work.

The list of things generally put into one of the baskets was given to the class. The children decided upon the *average* price of each item. This called for an appreciation of the word *average*. The work was done orally with class discussion. For instance, when the price of a squash was asked, one child said "twelve cents," another, "eighteen cents," etc. The class finally agreed that a medium-sized squash would cost about fifteen cents.

Small squash	12¢
Large squash	18¢
	2)30¢
	15¢

The child who recorded the price of the squash on the board wrote fifteen cents — $.15. Before the lesson was over, several children had a little trouble in writing cents without dimes ($.06), keeping the money columns straight, using the dollar mark and decimal point, etc. With suggestions from other members of the class, the list was complete.

In the item "6 lb. of beef @ 16¢" the class found that it was necessary to multiply by six. As they had never had the six table, I did not expect them to be able to do it, but it chanced that one boy knew his six table and did the work readily.

Marion Thalman. Nov. 23, 1909.

The Cost of a Thanksgiving Dinner

1 squash	$ .15
2 cans of vegetables @ 10¢	.20
3 qt. of potatoes @ 8¢	.24
6 lb. of beef @ 16¢	.96
2 qt. of apples @ 12¢	.24
1 qt. cranberries	.12
1 lb. sugar	.06
1 lb. nuts	.18
	$2.15

When the price of each item had been decided upon, the children found the total cost at their seats, and their results were compared.

The lesson closed with the question, "What did you find out in to-day's lesson?" The answers were: "The cost of a Thanksgiving basket"; "That Russell is the only child who knows his six table"; "That we need to write dollars and cents so that we won't make mistakes."

At the beginning of the arithmetic lesson the following day, when the class was asked, "What do we need to do to-day?" there was a division of opinion as to whether the drill on dollars and cents or learning of the six table should come first. The decision was in favor of the drill on writing money, and the six table was presented later in the same period.

The result of the lesson on the cost of the dinner was sent to the principal. The class received a note of thanks for the help which it had rendered. The children were proud of their accomplishment and anxious to work out more real problems.

A LESSON FOR APPRECIATION

Teacher's aim: To help children to enjoy Stevenson's *Bed in Summer.*

Did any child in the room ever have to go to bed before it was dark? Did you ever get up in the morning before daylight? Stevenson remembered how he used to feel when he had to go to bed before dark, and wrote a story about it. Would you like to hear the story?

Children's aim: To enjoy Stevenson's story about going to bed before dark.

Subject Matter

BED IN SUMMER

"In winter I get up at night
And dress by yellow candle light;
In summer quite the other way,
I have to go to bed by day.

"I have to go to bed and see
The birds still hopping on the tree,
And hear the grown-up people's feet
Still going past me in the street.

"And does it not seem hard to you,
When all the sky is clear and blue,
And I should like so much to play,
To have to go to bed by day?"

Method of Procedure

I want you to tell me all you can about the place where Stevenson lived, when I am through reading the story.

Read the poem.

Who will describe the place where he lived?

Were there other children who lived near by?

Were there any trees near the house?

I'll read the poem again and you will see how many reasons Stevenson had for not wanting to go to bed by day.

Read the poem again twice.

Why does he tell you that he has to get up at night in the winter?

When do the birds go to bed?

Do the grown-up people go to bed when children do?

How was he able to see the birds in the trees? Do you think he ever got out of bed?

Do you think all the children in the street had to go to bed as early as Stevenson? Let me read the last stanza and see whether you can tell.

Recall the Mother Goose Rhyme:

"Girls and boys come out to play,
The moon doth shine as bright as day;
Leave your supper and leave your sleep,
And come with your playfellows into the street."

How did Stevenson know the other children were in the street?

Read the last stanza.

I'll read the whole story again, and then ask some one to tell me Stevenson's story about going to bed in summer.

Read the poem, calling attention to the different scenes: (1) The boy that gets up by night and dresses by yellow candlelight. (2) In summer quite the other way, he has to go to bed by day — he has to go to bed and see the birds still hopping on the tree and hear the grown-up people's feet still going past him in the street. (3) The little boy lying in bed who feels very much abused.

And does it not seem hard to you, etc.? Let us see all of the pictures again. Read in same way again. Who will tell the story?

I am going to write it on the board, so that we can tell the story as Stevenson did.

After the treatment indicated above, memorization will be very easily accomplished. The preliminary study for appreciation will make the poem mean more to the children than it could have meant had the teacher simply read it to the children two or three times and then asked them to memorize it.

In a study lesson, the plans will vary from a single exercise in finding the principal thought in a paragraph to a development lesson, not dissimilar as to plan to other lessons of the same type. The recitation lesson may be a development lesson, inductive or deductive, or a drill lesson. The plans would therefore be similar to those given above.

In conclusion, it may be suggested that any teacher who feels that it is impossible to plan all of her work will gain greatly if she will plan carefully for a single subject. As facility is gained in plan making, it will be possible to write plans for two or three or for more subjects. A topic plan should result in definiteness in the work of both teacher and pupils. Good plans give the teacher more freedom in conducting her work, and enable her to tell definitely the progress which the class has made. Plans are necessary in teaching. No one has a right to pretend to teach without previous thought concerning the subject to be taught, and the method to be employed in giving children command of this material.

For Collateral Reading

W. W. Charters, *Methods of Teaching*, Chapter XIX.
C. A. and F. M. McMurry, *The Method of the Recitation*, Chapter XIV.

Exercises.

The plans which follow were offered to teachers as suggestions rather than as outlines of subject matter or of procedure to be followed absolutely. Reorganize these plans so as to show subject matter and method separately. Add to the subject matter or method wherever necessary. If you think best, change the organization of material, the statement of aim, the references to books, and the like. Do not change the topic. As a result of your work you should be ready to present a plan for which you are willing to stand.

LITERATURE — THIRD GRADE

Atalanta's Race

Note. — The story of Atalanta's Race furnishes material for several lessons. The following outline embraces the whole set of lessons.

Aim: —

To teach the story of Atalanta's Race.

I. Division into parts.
   1. Atalanta.
   2. Hippomenes.
   3. The Race.

II. Outlining of each part.
   1. Atalanta.
      a. Her home.
      b. Swiftness of foot.
      c. Beauty and grace. Desire of youths to win her.
      d. Her determination.
   2. Hippomenes.
      a. Who he was.
      b. His decision.
      c. His resort to strategy.
   3. The Race.
      a. Atalanta's self-confidence.
      b. The first apple; the result.
      c. The second apple; the result.
      d. The third apple; the result.

Preparation: —

Tell me of a game in which one child outruns another.

Tell me of a story in which two animals played a game like this race of Atalanta. (Hare and Tortoise.)

Let us play a game in which two boys run a race.

Let us play the Hare and the Tortoise.

Which is the faster runner, the hare or the tortoise?

How, then, did the tortoise win the race?

Presentation: —

Let the teacher tell the story of the Hare and the Tortoise.

Find in the Atalanta story the person who takes the place of the hare, and the one who takes the place of the tortoise.

By showing the picture in the book, have the children solve the problem.

Did Atalanta expect to win the race? Why not?

How did this make her act?

Did the hare expect to lose the race? Why not?

The teacher may tell the story of the girl going to market with a basket of eggs on her head. She was so sure of getting sale for her eggs that she set to dreaming of the pretty things she would buy with the money she was to get for the eggs. She would buy, she thought, a bright new dress and a new hat; and then how mean and shabby she could make the other girls look; and how she could walk past them all, tossing her head in pride! Forgetting that she was still only on her way to market, she then gave her head a proud little toss; and — what do you think happened?

Let the children give the story of the Hare and the Tortoise in their own words.

What is likely to happen to any one of us who is too sure of winning?

What will we say, then, of any one who is too sure of anything?

It has been said, "Count not your chickens before they are hatched." What does this mean?

ARITHMETIC — FIFTH GRADE

Aim: —

To teach division of decimals.

The following is assumed as class knowledge upon which the process should be based.

1. Ability to read and write decimals.
2. Vivid knowledge of the relations of one hundred to ten, ten to one unit, one unit to one tenth, one tenth to one hundredth, etc.
3. Knowledge of the process of division of whole numbers.
4. The principle: multiplying or dividing both dividend and divisor by the same number does not change the quotient.

Preparation: —

1. Division by an integer.

a. Find the value of 1 acre of land if 15 acres cost $77115.

$$
\begin{array}{r}
\$5141 \\
15\overline{)\$77115} \\
75 \\
\hline
21 \\
15 \\
\hline
61 \\
60 \\
\hline
15 \\
15
\end{array}
$$

b. Find the value of 1 acre of land if 15 acres cost $771.15.

$$
\begin{array}{r}
\$51.41 \\
15\overline{)\$771.15} \\
\underline{75} \\
21 \\
\underline{15} \\
6.1 \\
\underline{6.0} \\
.15 \\
.15
\end{array}
$$

Compare the steps in (*b*) with the corresponding steps in (*a*). The pupil will experience no difficulty in telling the unit that each quotient figure represents, for he knows that dividing any number into parts does not change its unit.

Presentation: —

a. 12 is contained in 36 how many times?

$$
\begin{array}{r}
12\overline{)36} \\
3
\end{array}
$$

b. Multiply both dividend and divisor in (*a*) by 2.
24 is contained in 72 how many times?

$$
\begin{array}{r}
24\overline{)72} \\
3
\end{array}
$$

c. Multiply both dividend and divisor in (*a*) by 10.
120 is contained in 360 how many times?

$$
\begin{array}{r}
120\overline{)360} \\
3
\end{array}
$$

Compare the quotients. Recall the principle: Multiplying both dividend and divisor by the same number does not change the quotient.

d. .2 is contained in 2.4 how many times?
Multiplying both numbers by 10, to what is the divisor changed? To a whole number.
2 is contained in 24 how many times?

$$
\begin{array}{r}
2\overline{)24} \\
12
\end{array}
$$

e. .22 is contained in 2.42 how many times?
Change .22 to a whole number, by multiplying both the numbers by 100.
22 is contained in 242 how many times?

$$\begin{array}{r} 11 \\ 22\overline{)242} \\ \underline{22} \\ 22 \\ \underline{22} \end{array}$$

f. .005 is contained in .125 how many times?
By what shall both numbers, be multiplied so that .005 may become the whole number 5?
5 is contained in 125 how many times?

$$\begin{array}{r} 5\overline{)125} \\ \underline{25} \end{array}$$

g. 2.88 is contained in 3.456 how many times?
By what shall both numbers be multiplied so that 2.88 may become the whole number 288?
288 is contained in 345.6 how many times?

$$\begin{array}{r} 1.2 \\ 288\overline{)345.6} \\ \underline{288} \\ 57.6 \\ 57.6 \end{array}$$

Many such examples will enable the pupils to formulate the generalization: "To divide a decimal by a decimal, multiply the dividend and divisor by the power of ten that will change the divisor to an integer, then divide as in simple division."

NATURE STUDY — FIFTH GRADE

Detailed Plan for a Series of Lessons

Topic: —
The horse.
Materials: —
The horse seen on the street; drinking fountains; horsemanship observed; harness; shoes; protection; different kinds

of vehicles; printed matter issued by the Society for the Prevention of Cruelty to Animals and by the Department of Agriculture.

Aim: —

To train the children to meet sympathetically and intelligently their responsibilities to the horse.

Preparation: —

Years of interest in horses; directed observation of other periods.

Presentation: —

1. Stories of horses known to the children — those owned by their parents, fire horses, horses of the mounted police, showing their faithfulness, intelligence, strength, training, treatment.

In the city of Baltimore the old fire horse is practically pensioned when unfit for further service. This is one way in which right-minded people acknowledge their obligations to horses, by providing for their comfort in their old age.

Have stories like the *Pacing Mustang* read to the class; allow the children to take the storybooks home, and encourage them to bring to the class other stories about horses. Encourage the children to read brief histories of the great breeds of horses — the Norman horses, Clydesdales, etc. — horses that hold the world's records for speed.

2. Observations to identify horses that show normal blood, and discover their fitness of blood and temperament for the work they are doing.

Are they strong enough for the work they are required to do?

Are they disturbed by passing street cars? If so, how do they show it?

What is the effect upon them of the confusion of other city noises?

Notice that while some horses are evidently distressed by the confusion of city life, others love it and become homesick when sold for use in the country.

Blanketing: —

Call attention to the manner in which large firms so carefully blanket their horses.

Why should a horse be blanketed when he is standing?

Shoeing: —

Notice the cause of slipping, stumbling, and falling on icy or

wet pavements, and therefore the necessity for rough shoes, rubber shoes, etc.

If possible, bring into the class a specimen of a patent horse-shoe; the shoe and shield of a cart horse.

Harness: —

Is the horse easy in harness?

What sort of a checkrein would you use? Why?

Why is the back pad used with the two-wheel cart?

What are the effects of an ill-fitting harness?

What do you think of the law which in some places punishes a man whose horses show galls?

Horsemanship: —

Have the children report critical situations which have happened within their observation and how they were met by drivers; their observation of the affection shown by a horse toward his master.

General Condition of Horses: —

Discuss the effect of grooming upon the horse's coat.

Why should the horse be fed regularly?

Why should ground food be given to an old horse whose teeth are poor?

Discuss the necessity of allowing the horse freedom in traveling.

Temporary lameness is frequently due to a stone in the foot; how may it be removed?

What should be done for a horse that is seriously lame?

3. The economic value of such knowledge as the foregoing: —

Horses are stiffened by standing unblanketed in the wind or cold.

Foundering is caused by watering a horse when he is overheated.

A properly fitted harness and a comfortable checkrein, if any is used, save the strength of the horse.

The selection of a horse whose strength and temperament fit him for his work adds to his value and usefulness.

Skillful drivers, especially those who like their teams, can secure a great amount of work from them and yet save much of their energy. It frequently happens that after a day's work one man will bring in a team comparatively fresh, while under a different driver the same team will be worried into exhaustion.

4. Knowledge of the work of the Society for the Prevention of Cruelty to Animals: —

The work of this society demands judgment based on a fuller knowledge of conditions and causes than most children of their ages possess. Its work, therefore, is not intended for children, but they should know what help they may give the society, and be taught to use it.

5. Knowledge of the city law for protecting horses.

Seat Work: —

Sketches of horses' hoofs showing how a stone may cause lameness.

Sketches of different kinds of shoes.

Sketches of different kinds of checkreins: the overdraw check and its effect; side check and its effect.

Different head and ear postures of horses indicative of their conditions and feelings.

Getting records of observations into shape to present to class.

Have each member of the class imagine himself to be his favorite horse, — a fire horse; mounted policeman's horse; a United Railway repair wagon horse; a hospital ambulance horse; an express-wagon horse; a carriage horse; a broken-down carriage horse, etc., — and write a story of his part in a fire, a serious accident, or some other situation.

Give related language work.

GEOGRAPHY — FIFTH GRADE

Detailed Plan for a Series of Lessons

Topic: —

Pittsburg as a trade center.

Materials: —

Pictures, maps, sand table, specimens of iron ore, coal, coke, limestone, reference books, railroad folders.

Aim: —

To show how natural advantages have determined the location and growth of Pittsburg; to show the direction and extent of manufacturing and commerce in Pittsburg.

Preparation: —

1. Study of coal mine, iron mine, blast furnace.
2. Relation of iron mines to coal mines.
3. Location of Pittsburg —
   (*a*) in coal region.
   (*b*) at junction of rivers which form the Ohio River.

Presentation: —

(Following closely McMurry's *Special Method in Geography*.)

1. Advantages of Pittsburg for iron and steel manufacturing. Illustrate with sand map.
   (*a*) Coal region — rivers bring coal to Pittsburg.
   (*b*) Iron region near.
   Much iron ore brought from Lake Superior region *via* Great Lakes, by railroad from Lake Erie.
   In manufacture of steel more coal is used than iron ore; it pays to bring iron ore to coal.
   (*c*) Manufactured products — steel rails, armor plate, pig iron.
   (*d*) Rank of Pittsburg in regard to manufacture of iron and steel. Pittsburg makes 10 per cent of all iron and steel goods made in the United States.
2. Neighboring manufacturing towns.
   (*a*) Names — Allegheny, Carnegie, Homestead, Braddock, etc.
   (*b*) How do their manufactures compare with those of Pittsburg in kind? in quantity? in value?
3. Coke ovens.
   Uses of coke.
   Kind of coal used; where obtained.
   Amount of it put into each oven.
   Length of burning.
   By-products.
   Drawing out and cooling.
   Extent of ovens.
   Effect on landscape.
4. Blast furnaces.
5. Other manufactures.
   (*a*) Oil refining.
   Where oil comes from.
   How it is pumped, carried, stored.
   Value of pipe lines.
   How is oil brought to Baltimore?
   Effect of oil tanks on landscape.
   Processes of refining.
   Dangers.
   Uses.
   By-products.
   (*b*) Glass making.
   Kinds of glass made.

Materials used.
Where found.

6. Transportation by water. Illustrate with sand map.
   (*a*) Need for means of transportation: of raw material to Pittsburg; of manufactured products from Pittsburg.
   (*b*) Rivers.
   The Allegheny and Monongahela bring raw materials to Pittsburg.
   The Ohio carries raw materials and manufactured products away from Pittsburg.
   No tracks or roadbed to be laid for river, — river always ready; Ohio deep enough for large barges; swiftness of current due to nature of slopes.
   Coal and iron carried by river as far as New Orleans.
7. Railroad center.
   (*a*) Sections of country not reached by waterways. How products are transported to those parts?
   (*b*) Need of railroads for people who travel to and from Pittsburg.
   (*c*) Chief directions in which railroads lead from Pittsburg. What roads lead from Baltimore to Pittsburg? From New York to Pittsburg?
   (*d*) What supplies are brought by railroad besides those needed in manufacturing?
8. Aspects of the city of Pittsburg: —
   Wealth — opportunities for getting, for spending.
   Education — what special class of schools likely to develop.
   Smoke and dirt — due to nature of manufactures.

Seat Work: —
Illustrative drawings.
Maps showing coal and iron regions, course of rivers.
Related language work.
Reference reading.

CHAPTER XVII

THE TEACHER IN RELATION TO SUPERVISION

TEACHERS are generally responsible in some measure to one or more supervisory officers. Those who control the schools believe that better work will be done because of the supervision which is provided. It may not be out of place, therefore, in a book devoted to the problems of the teacher to consider the relation to supervision and to those who supervise her work.

The fundamental purpose of supervision, whether of schools or of other activities, is increased efficiency of all who participate in the work. Supervisors are worthy of the name only when they do their best to increase the efficiency of every teacher with whom they come in contact. Happily, this attitude of helpfulness characterizes most of those who are known as principals, primary or grammar-grade supervisors, subject supervisors, assistant and associate superintendents, and superintendents of schools. It may be that because of the great number of teachers employed in a system of schools some of these officers can have little direct relationship with individual teachers; but in the organization of the schools, by means of regulations, courses of study and the like, or through those who come directly in contact with teachers, these men and women seek to help each teacher to do better work. It is important that all teachers realize clearly the significance of the supervisor's work, and that she avail herself of the help and coöperation which is thus provided.

One of the functions of the supervisor is to criticize the work which is being done by individual teachers. It is especially difficult for some teachers to appreciate the purpose of such criticism, or to avail themselves of the aid which is offered in

this form. Let us examine the different kinds of criticism which one may expect to receive, and try to discover how to get the most out of this instrument of supervision.

There are supervisors whose criticism is occasionally purely negative. They come into the room, observe some of the work, and remark, either at the time or later, that the work was good, or that it was poor. It does not help one much, except in a feeling of good will toward the supervisor, when told that work is well done; nor is it very significant for future work that one's efforts have been condemned. When the supervisor indulges in this type of criticism, the teacher has a right to ask him for the reasons which lead him to praise or to condemn. If excellent work is to be repeated, then the elements which have made for success should be pointed out. One may try to repeat good work and fail miserably because the elements in the excellent work which made for success have been overlooked in the second effort. Likewise failure may occur, even though it has been stamped as poor work, because the teacher fails to see the essential weakness of her effort.

Most supervisors are able to find strength of some sort in the work of every teacher. It may be worth while for the teacher at times to ask for a discussion of the strong points in her work. This constructive appreciative criticism may help her to receive with open mind the destructive criticism which may be needed to bring about the elimination of weakness. Any teacher should welcome the criticism which frankly points out the deficiencies of her work and suggests the remedies which should be applied. We all want to do our best work. Unfortunately we cannot always see our teaching in true perspective. The supervisor who comes in from the outside, as it were, with a wide range of experience in teaching and in observing teachers can often give the suggestion which will make work, not only more efficient, but also more pleasant.

It is a good rule for both supervisor and teacher to wait until the end of the day or even for two or three days after the

visit before the criticism is given. Snap judgments are apt to be wrong on both sides. The supervisor needs time to analyze the situation carefully in order to pick out the elements in the situation which are most significant and to overlook that which is trivial. The teacher will often be able to analyze her own work and to point out its defects, if time is given her to think it over. If the teacher can discover her own inefficiency, and if she is willing to talk frankly with the supervisor concerning these difficulties, the work of criticism will give satisfaction to both. A teacher has a right to ask for an appointment with a supervisor for the discussion of her work. Supervisors are, as a rule, only too willing to grant such a request.

Criticism has not fulfilled its mission, if it stops with discovering to the teacher her strength and her weakness together with the analysis of the situation which enables her to repeat successes and avoid failures. A wide-awake teacher will be looking and asking for suggestions concerning new kinds of work. Suggestive criticism opens up the way for growth by giving the teacher the encouragement and help which are needed to undertake the new or unusual type of work. Many of the best teachers might have remained in the less efficient group, had it not been for the help and inspiration which was imparted by a wise supervisor.

School exhibits are another means sometimes employed by the supervisory force to increase school efficiency. Here, again, the teacher should realize that the purpose of the supervisor is not to burden her with work, but rather to offer the help which may come from an exchange of experiences. The school exhibit which is most worth while does not require any special preparation of material on the part of the teacher. The work regularly done by children without corrections or refinement constitutes a true exhibit of the results secured. Any other kind of an exhibit is merely a test of the teacher's ingenuity, her skill in masquerading under the names of her children.

When a genuine exhibit of children's work is brought together, it affords to teachers and supervisors alike a wealth of suggestion and help. The writer remembers visiting an exhibit of drawing and constructive work in one of our large cities. The supervisors of this work were in charge at regular hours each week. A very large number of teachers came to see what was being done by other teachers in their grade. A special feature of the exhibit was an abundance of suggestions for the work of the next week provided by the supervisors and taken from the work of previous years. The consultation between supervisors and teachers concerning the work exhibited, and with reference to the work both past and yet to be done, was free from restraint and often lasted ten, fifteen, or even twenty minutes. Needless to say, the results achieved in drawing and constructive work in this city were far above the average. Similar exhibits of work in English composition, arithmetic, some phases of the work in literature, nature study, history, and geography are possible and cannot fail to help the teacher who is anxious to improve her work.

Visiting the work of other teachers has one advantage not possessed by the exhibit: it is possible to see not only the result but also the methods which are employed in securing the product. A good supervisor should be able to tell teachers where to go to see the kind of work which is most helpful. Any teacher should welcome the opportunity to see the work of a teacher who is strong where she is weak. Random visiting is not worth much. What counts is a visit to a teacher who has some help to offer, in order to satisfy a real need. Often the most profitable visiting can be done within the system in which the teacher works. Not infrequently the greatest help can be secured from another teacher in the same building. Whenever or wherever a teacher visits, the important thing is to look for the strong points in the work. The teacher who goes for help will not be disappointed; the one who looks for defects, who is hypercritical, will not profit by the time used.

After a visit to a teacher whose work is known by the supervisor, a conference may be held, or a report given by the visiting teacher. If the visit is worth making, it is worth some further consideration. It will help the teacher to talk over the visit with the supervisor with particular reference to her own work. The elements of strength in the work of the teacher visited can thus be determined, and the modifications in the work of the visitor desired by the supervisor be made definite.

Examinations have from time immemorial been used by supervisors to determine the success of school work. Teachers not infrequently seem to feel that they are an unnecessary hardship imposed without sufficient justification, whether teacher or pupils are considered. Let us inquire what examinations should mean to the teacher. First of all, it may be worth while to remember that the command of some knowledge, and the ability to use it when demanded, should form a part of the equipment of children who are being educated. It is well at times to stop and discover how much children know, and what facility they show in using their knowledge. It is a shock sometimes to discover that a room full of enthusiastic, well-behaved children do not know their multiplication tables, cannot add, subtract, or divide without making many mistakes, cannot write an acceptable paragraph because of mistakes in form which they should have mastered long ago, do not know on which side of the Ohio River to locate the state of Ohio; but that is just what is apt to happen in a school where examinations are never given.

Success or failure in an examination should not be all-important to children, nor should it lead to undue praise or condemnation of teachers. The wise teacher will try to find in the results of the examination evidence of the deficiencies of her teaching. In the light of the work done by the children she can tell where she can depend upon their knowledge, what part of the work needs to be reviewed, which children need special

help. An examination should be a taking of stock which will enable teacher and pupil to do more and better work, because each is acquainted with the needs of the situation better than before.

Teachers' meetings are worth just about what each individual teacher is willing to put into them. The teacher who comes to a meeting with her problems, willing to acknowledge that she needs help, and anxious to get it will not find these gatherings dull or uninteresting. If the meeting is organized for study, as is done in connection with reading circle work, the meeting can be transformed from a perfunctory recitation of the ideas of the book into a live professional discussion, by the activity of two or three earnest teachers. If the meetings are not good, individuals are at fault; if these teachers become active, if they try to make the most out of these discussions, their attitude will change.

One of the best types of teachers' meetings is centered round the actual teaching of children by a member of the group, to be followed by discussion of the work done. There is no more certain way to grow professionally than to be willing to demonstrate your theory by practice, or to discuss the work which is done by other members of the group. In several of our cities these lessons, taught sometimes by the supervisors and at other times by the teachers themselves, have become a regular feature of the year's work. The teacher who is most anxious to grow will be the first to avail herself of the opportunity to teach such a lesson. Supervisors sometimes hesitate to suggest this kind of a program for teachers' meetings, because teachers are so unwilling to do their part in making the work a success. It is a poor professional spirit which is not strong enough to lead a teacher to accept the criticism of her fellow teachers, when she knows that therein lies the possibility of growth. Any group of teachers who will voluntarily participate in such work will find that the teachers' meeting, instead of being a bore, will come to be looked upon as the brightest spot in the

whole week, because of the help and inspiration which is derived from the hour's work.

Institutes were once looked upon as places where teachers came to be entertained, or, possibly, to be inspired. There was a time when the best institutes were conducted on the "pouring in" plan. A lecturer, or several lecturers, dispensed the truth, and teachers sat in their places, supposedly drinking deep draughts from these fountains of wisdom. It is strange that all of the theory of teaching which was dispensed did not suggest that the manner of conducting the institute was wrong. In our best institutes to-day teachers participate in discussion, study and recite from books, undertake the revision or organization of courses of study in coöperation with their supervisors; in short, the institute has become a school for professional study. In such an institute, as in teachers' meetings, those who come with real problems, anxious to get help, find the week or two all too short. A group of teachers anxious to grow professionally can, in most cases, secure the coöperation of supervisors in transforming an institute which is organized on the old basis.

If a teacher's supervisors are not helping her, it may be well to inquire whose fault it is. The teacher who meets the supervisor halfway, the one who invites criticism, who avails herself of the help and suggestion which may come from exhibits, visiting, teachers' meetings, and institutes will, in all probability, grow strong enough to help others. She may in her turn be called upon to accept the responsibilities, the trials, and the joys of a supervisor.[1]

For Collateral Reading

The Seventh Yearbook of the National Society for the Scientific Study of Education.

[1] Some discussion of the course of study as an instrument in supervision is given in the chapter on "The Teacher in Relation to the Course of Study."

Exercises.

1. What is the purpose of supervision?
2. Give illustrations of work done by the supervisors whom you have found most helpful.
3. Name the types of criticism. Give illustrations of each type from your own experience.
4. What is wrong with the teacher who resents adverse criticism?
5. Why wait a day or two after the supervisor has visited you before asking for criticism on your work?
6. If the supervisor does not volunteer criticism, what would you do?
7. Have you ever attended a school exhibit which has helped you in your work? What kind of work should be sent to the exhibit? Why insist upon a continuous exhibit rather than one that lasts only a week?
8. How can you hope to get the most out of a day's visiting? What help would you expect from the supervisor?
9. Of what value are examinations to you?
10. When a teacher says that she can get nothing from the teachers' meetings, what is wrong?
11. What help would you expect to get from the observation and discussion of actual class teaching? Have you ever taught a class for observers?
12. What suggestions would you make for the improvement of your institute? Do you think changes could be made if teachers wanted to gain the most possible during the week or more devoted to the institute?
13. What is wrong in a situation where teachers complain that their supervisors are hard taskmasters?
14. If supervision is to make for professional growth, what contribution must the teacher make?
15. How do you explain the attitude of the teacher who says she wants no supervision?

CHAPTER XVIII

THE TEACHER IN RELATION TO THE COURSE OF STUDY

TEACHERS sometimes look upon the course of study merely as a demand made by those in control of the school system for a large amount of work to be accomplished. The course of study indicates that certain topics in English, arithmetic, nature study, geography, history, industrial arts, and the other subjects of the curriculum are assigned to the grade, and the teacher expects that her pupils will be examined on this work at stated times during the year in order to determine the efficiency of her work and the fitness of the children for promotion. From this point of view, the course of study is an ever present taskmaster, always urging that more work be accomplished. Let us inquire whether this is in reality the meaning of the course of study to the teacher.

In the first place, all will admit that in any system of schools it is necessary to determine somewhat definitely the work to be done by a given grade. If such provision were not made, it would be impossible to transfer children from one school to another, and very difficult for the supervisory force to render help to large numbers of teachers. Then, too, there is an order in the development of subjects, which is necessary both from the standpoint of the subject and from the point of view of the child who is to gain the experience which the subject offers.

It is true that a course of study which is made to fit all of the children of a great city or state must be interpreted liberally, if good teaching is to be done. To this end, our best courses of study demand that a minimum amount of work be done by all teachers, and suggest alternative and optional work to meet the needs of children whose experiences are varied,

and whose needs are correspondingly different. In any progressive school system, the capable teacher has opportunity to vary the material presented under the head of the various subjects in such a manner as will satisfy the interests and the problems of the group of children for whose growth she is responsible.

A good course of study will save the teacher much time and energy by the organization of material which it presents. In many of our larger cities a volume of from fifty to two hundred pages has been prepared for each subject. These manuals suggest the order in which it has been found by experience that the topics can best be presented. In many cases a helpful analysis of each large topic from the point of view of presenting it to children is included. Besides this organization of material, references which will prove helpful to the teacher, both from the standpoint of subject matter and of method, are included in our best courses of study. In many cases suggestions for teaching, elaborated at times into complete lesson plans, are given.

In the making of the course of study, the teacher should welcome any opportunity to contribute her knowledge concerning the availability of material or the methods to be used in her grade. Any good course of study should be the joint product of at least three classes of people: the expert in the subject, the expert in supervision and administration of schools, and the expert teacher. The subject matter expert is needed to pass upon the material from the standpoint of fact and from the point of view of one who sees the beginnings of a subject in relation to the whole field. The supervisor has to provide for the proper relation of the different subjects, determines the amount of time to be devoted to the subject, and the general method of procedure in teaching the subject. The teacher needs to advise as to the practicability of the whole scheme. She has in mind a particular group of children with certain experiences, interests, and abilities, and her judgment is prob-

ably safer than either of the others as to the availability of any particular topic or phase of the subject. In addition to this service, any group of teachers can give most significant help with respect to the methods which have proved most helpful. Indeed, our courses of study could be made much more helpful if teachers were only asked to give suggestions concerning the organization of material and methods of teaching, which they are so well equipped to offer by reason of their experience in teaching the subject to children. Happily, the practice of inviting the coöperation of teachers in making the course of study is becoming more common in our cities. Any capable teacher who is anxious to participate in the organization of the curriculum will find opportunity to make her contribution.

Possibly there are teachers who, because of the very excellence of the courses of study provided, feel that all that is required for them is to follow blindly the directions given. Instead of considering the course of study as a hard taskmaster, they look upon it as a crutch upon which they lean heavily. For these teachers there is little need for preparation. The course of study and the textbooks have solved the problems of teaching. Let us inquire just what the curriculum of our schools stands for before attempting to decide just what relation the teacher bears to it.

A course of study is not so much knowledge to be poured in. Rather it represents possible experiences for which children may have need, experiences which will aid them in the solution of their problems and make possible for them the realization of their purposes. How did all of this knowledge come to be preserved, and how did it happen to be arranged in groups labeled by certain names? Men have preserved from time to time, by handing down by word of mouth or by records made on stone, wood, skin, paper, or other surfaces, knowledge which they have found useful in meeting the problems which confront them. For convenience of reference this knowledge has come to be grouped, and to each group a name has been

applied. If we could only remember how we came to have this body of knowledge, how it happened to be thought worth while to preserve the experiences which when grouped together we know as subjects, it might make us a little more judicious in our attempt to acquaint children with their inheritance.

Our schools have all too frequently acted upon the principle that children could assimilate the school subjects without reference to their past experience or their present needs. It has been common to say, teach so much of this or that subject, just as if the child mind was a receptacle to be filled. The difficulty of this attitude toward school subjects is twofold: first, the children fail to gain any appreciation of the experiences involved; and, second, they fail to gain from the process the power of independent thought, or the spirit of investigation which it is the purpose of education to impart.

The doctrine of formal discipline, as commonly interpreted, has been largely responsible for our wrong idea of the meaning of subjects of study. The idea that any study, especially if it proved disagreeable to the pupil, and had no definite relationship either to his past experiences or present needs, would mean most for his education, has not yet entirely disappeared. Aside from the psychological fallacy involved, that ability to do one kind of work would spread or be available for all other kinds of mental activity which we call by the same general name, the devotees of the doctrine ignored the fact that the maximum of activity or hard mental work could be secured only under the stimulus of genuine interest.[1]

Possibly the introduction of the industrial arts[2] and the more rational approach which they demand, may serve to illustrate the method to be used in teaching other subjects.

[1] For a discussion of the doctrine of formal discipline, and for bibliography, see Thorndike, *Educational Psychology*, 1903 edition, Chapter VIII; Heck, *Mental Discipline.*

[2] James E. Russell, "The School and Industrial Life," *Educational Review*, Vol. XXXVIII, pp. 433–450.

In cooking, for example, we would hardly expect to have a child begin by engaging in an exercise in beating eggs without reference to any problem which required this activity. If children are to learn something of wood and its use in our industries, we commonly expect them to gain some knowledge of the processes involved in the course of the construction of furniture for the playhouse, a flower box for the window, a sled, a checkerboard, or some other interesting project. It is true that the industrial arts lend themselves more readily to the dominant interests of children to do and to make than do most school subjects. If these activities, which are essentially the activities characteristic of our modern civilization, be used to best advantage, they will offer many opportunities for making significant the other subjects.

Any considerable participation in the processes which are fundamental to the great industries cannot fail to arouse an interest in the source of materials, the development of the industry, and a desire to express one's self with reference to the work which is being done. From the interest in the source of materials grows naturally the work in nature study and geography. The development of the industry takes us back even to the time of primitive man, and history becomes significant. The handling of materials in construction suggests the need of measurement, and arithmetic is provided for. In all of this work there will be a demand for communication, the necessity to learn what others have recorded in books, and the wish to express one's own experience in oral and written speech. The experiences of people like ourselves, as idealized in literature, will make its appeal in spite of the worst our teaching can do. It is not maintained that all subject matter groups itself naturally around industrial activities, and that these activities should, therefore, form the center of the curriculum; rather, it is sought to emphasize the relationships to the real needs of children and the possibility of utilizing these genuine motives in the teaching of school subjects.

We teach the subjects of the curriculum in order that children may understand their environment, be adjusted to it, and, as President Butler puts it, come into possession of their spiritual inheritance. Out of the work which is done, these same children should gain power to adapt themselves to new conditions and should be equipped to render service in the progress which is yet to be made in our society. Now one's adjustment to the present environment must be an adjustment to *his* environment, a solution of his problems as they at present exist. Future adaptability is conditioned by the experience which one has had in making such adjustments. The ability to contribute to the progress in which each should participate is dependent, not so much upon the number of facts one possesses, as upon the attitude of investigation which characterizes him, the respect for truth, and ability to think straight which have been developed by his education. From whatever point of view we approach the problem of teaching our subjects, the answer is the same: meet present situations, solve present real, vital problems, make subject matter meet the needs of the children you are teaching. This analysis of the curriculum makes apparent the important part to be played by the teacher in making available the experiences which the school subjects are organized to present.

The courses of study may present much that is helpful in the organization of material, the suggestions for teaching may be gathered from the experience of many teachers, and still the great problem of making these subjects vital to children remains as the work of every teacher. Motives which grow out of the experience which children have already had must be sought. The material to be presented will be significant in the experience of these children only when they approach it in order to satisfy their real needs. Aside from the possibility of finding in one of the subjects, as, for example, the industrial arts, a motive for other work, the school situation

itself presents many opportunities for discovering real needs to children.

The school festival, school parties for parents, fairs and sales, the general assembly, excursions, gardening or other industrial activity, plays and games, have in the hands of skillful teachers provided a compelling motive for a great variety of school work. The author would not deny the power of intellectual interest, but he knows, as does every other teacher, that with children in the elementary school this motive is only gradually developed. The teacher who is alert to find some real need for the computations of arithmetic; who gives a genuine opportunity for oral or written expression; who appeals to the desire to use the knowledge gained in history and geography by means of the historical festival, the article in the school paper, and the like, as well as to the curiosity of the child; who allows children to make real things which satisfy their individual or collective needs in the industrial arts, — is the teacher who is teaching school subjects in the way that will mean most in the education of her pupils.

The demand that the teacher vitalize the curriculum does not lose sight of the necessity for drill, or of the demand that children *know*, as a result of their education. As a matter of fact, the more vital the experiences, the more apparent it becomes to both teacher and pupil that the fixing of knowledge or the acquiring of skill is a necessary condition of present efficiency and of future progress. The children who have the most genuine need for the multiplication table will be the first to learn it. If you are to read to a whole school and want to have them enjoy with you the selection which you are to interpret, you will have the best possible reason for good expression. History means something, if you really need to know the history of a period in order to reproduce accurately its language, manners, dress, and the like in your festival. The mistake which at times has been made by enthusiastic teachers of neglecting the drill side of the work, has not been

due to any difficulty which the situation presented from the standpoint of the children who are engaged in meaningful activities.

The teacher may not expect all children to gain equally in command of the experiences represented by the course of study. For her there must literally be courses of study for each subject, in that she must adapt her work in so far as is possible to individual needs. The office of teacher may well be exalted, for it is the teacher who must, because of her insight, provide for the needs of each child committed to her care, and in rendering this service provide society with its greatest asset, a truly educated human being.

For Collateral Reading

S. T. Dutton and D. Snedden, *Administration of Public Education in the United States*, Chapter XVIII.

Exercises.

The selections from courses of study are quoted by Dr. C. W. Stone in his monograph on *Arithmetic Abilities and Some Factors Determining them*. In Dr. Stone's study the pupils in twenty-six schools or school systems were tested. One of the problems raised had reference to the excellence of the course of study. The selections quoted represent a variety in excellence such as one will find in the courses of study prepared in any subject.

Study these selections from the following points of view: —

1. Do any of them give too little information to the teacher concerning the work required in the grade?
2. Do any of them restrict the work of the teacher unduly?
3. Which do you consider the best course of study?
4. Are any of these statements so complete as to relieve the teacher of the necessity of reorganizing the work for her own class?
5. How would you modify any of these courses of study in order to make it more valuable to teachers?
6. Indicate possible maximum, minimum, and optional work in the third-grade work in arithmetic.

SELECTIONS ILLUSTRATING GENERAL EXCELLENCE

From each of two systems ranking among the lowest five in course of study.

3 B. Speer work. Simple work in addition and subtraction, following the plan in the *Elementary Arithmetic*.

3 A. *Primary Book*. First half page 26, second half page 41.

Grade III, Number

Exercises, mental and written, in addition, subtraction, multiplication, and division of numbers.

The processes will be explained.

The multiplication table up to 12 will be made by the pupils and thoroughly committed to memory.

Drill in rapid addition.

Notation and numeration to five periods.

Table of weights, United States and English money. Problems in all tables learned.

Square and cubic measure. Troy and apothecaries' weights. Principles of multiplication.

From the system standing best in course of study.

Grade III B

Scope: Review the work taught in preceding grades. (This review may require from four to six weeks.)

Addition and subtraction of numbers through twenty. Multiplication and division tables through 4's. Give much practice upon the addition of single columns. Abstract addition, two columns; the result of each column should not exceed twenty. The writing of numbers through one thousand. Roman notation through one hundred. Fractions $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{1}{3}$. The object of the work of this grade is to make pupils ready in the use of the simple fundamental processes.

Book: Cook and Cropsey's *New Elementary Arithmetic* (for use of teacher), pp. 1 to 46.

The chief difficulty in the work of this grade is in teaching the arithmetical forms as applied to concrete processes. Pupils should know very thoroughly the work given on pages 1 to 23, Cook and Cropsey's *Arithmetic*, before any new forms are taught. They have up to this time used the arithmetical signs and the sentence, and have stated results only. New forms for addition and subtraction are first applied to concrete processes on page 24. No other forms should be taught until

pupils are very familiar with these. A drill should be given showing that these two forms are identical and that we must first know what we wish to use them for, if applied to problems. Write $\begin{matrix}9\\2\end{matrix}$ upon the board and indicate your thought by the signs + and −.

9	9	9 apples	9 apples
+2	−2	+2	−2
11	7	11	7 apples

Pupils should be very familiar with these forms before any written concrete work is given.

When the new form for multiplication is introduced, this drill should be repeated:

9	9	9
+2	−2	×2
11	7	18

Nothing new should be added to this until pupils can use these forms without confusion.

When presenting the new forms for division and partition the same method may be used, but pupils should use the form for division some weeks before using the same form for partition. It is not necessary to use the division form for partition until the last four weeks of the term, and not even then, if there seems to be any danger of confusion in using the same form for both processes. The terms *division* and *partition* should not be used. The terms *measure* and *finding one of the equal parts* can be easily understood. Pupils should be able to read arithmetical forms well, before any use is made of these forms in their application to written concrete work.

All concrete problems should be simple and within the child's experience.

Grade III A

Scope: 1. Review the work of Grade 3 B.

2. Abstract addition of three columns. Subtraction, using abstract numbers through thousands. Addition and subtraction of United States money. Multiplication and division tables through 6's. Multiplication and division of abstract numbers through thousands, using 2, 3, 4, and 5 as divisors. Addition and subtraction by "endings" through 2+9, last month of term. Writing numbers through ten thousands. Roman notation through one hundred. Fractions $\frac{1}{2}$, $\frac{1}{4}$, and $\frac{1}{3}$.

3. Application of fundamental processes to simple concrete problems, of one step.

4. Measures used — inch, foot, yard, square inch; pint, quart,

gallon; peck, bushel; second, minute, hour, day, week, month, year. Use actual measures.

Books: (In hands of pupils) Walsh's *New Primary Arithmetic*, pp. 1 to 68.

(For teachers' use) Cook and Cropsey's *New Elementary Arithmetic*, pp. 46 to 85, Article 105.

Even with only the work of a single grade to judge from, one has no difficulty in recognizing the wide difference in the excellence of these courses. As may be seen from Table XXVIII, page 73, in the rating they stand about thirty steps apart, *i.e.* the one from which the third illustration was taken has a score of 65, while the others have scores of 32 and 39, respectively.

SELECTIONS ILLUSTRATING EXCELLENCE IN DRILL AND IN CONCRETENESS

From the system ranking next to the best in drill.

Grade III B

I. *Objective.*
  1. Work.
    a. Fractions. Review previous work. Teach new fractions; 7ths, 10ths, and 12ths.
    b. Notation, numeration, addition and subtraction of numbers to 1000.
    c. Liquid and dry measures.
    d. United States money.
    e. Weights.
  2. Objects and Devices.
    a. Counting frame.
    b. Splints, disks for fractions, etc.
    c. Shelves.
    d. Liquid and dry measure.
    e. United States money.
    f. Scales.

II. *Abstract.*
  1. Work.
    a. Counting to 100 by 2's, 10's, 3's, 4's, 9's, 11's, 5's, beginning with any number under 10; counting backwards by same numbers, beginning with any number under 100.
    b. Multiplication tables. Review tables already studied. Teach 7 and 9.

c. Drill in recognizing sum of three numbers at a glance; review combinations already learned; 20 new ones.

2. Devices.
   a. Combination cards, large and small.
   b. Wheels.
   c. Chart for addition and subtraction.
   d. Fraction chart.
   e. Miscellaneous drill cards.
   f. Pack of "three" combination cards.

Prince's *Arithmetic*, Book III, Sects. I and II.
Speer's *Elementary Arithmetic*, pp. 1–55.
Shelves: See II A.

Combination Cards: large and small. These cards should contain all the facts of multiplication tables 3, 6, 8, 7, and 9. As: —

7×1	2×7	$7 \div 1$	$21 \div 3$
1×7	7×3	$14 \div 2$	$21 \div 7$, etc.
7×2	3×7	$14 \div 7$	

For use of these cards, see directions in I B.
Wheels for Multiplication and Division:
See directions under II A.
Chart for Adding and Subtracting:
For directions, see II B and II A.
Add and subtract 2's, 3's, 4's, 5's, 9's, 10's, 11's, 12's, 15's, and 20's.
Fraction Chart shows, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{3}$, $\frac{1}{6}$, $\frac{1}{9}$, $\frac{1}{12}$.
Miscellaneous Drill Cards:
For directions, see I A.
"Three" Combination Cards:
For use, see I A.

Grade III A

I. *Objective.*

1. Work.
   a. Fractions previously assigned.
   b. Notation, numeration, addition, subtraction, multiplication, and division of numbers to 1000.
   c. Long and square measures.
   d. Weights.

2. Objects and Devices:
   a. Counting frame.
   b. Splints, disks for fractions, etc.

c. Shelves.
d. Scales.

I. *Abstract.*

1. Work.
   a. Counting to 100 by any number from 2 to 12, inclusive, beginning with any number under 10; counting by same numbers backward, beginning with any number under 100.
   b. Multiplication tables — all tables.
   c. Drill in recognizing sum of three numbers at a glance; review combinations already learned; 20 new ones.
2. Devices.
   a. Combination cards — large and small.
   b. Wheels.
   c. Chart for adding and subtracting.
   d. Chart for fractions.
   e. Miscellaneous drill cards.
   f. Pack of "three" combination cards.

Prince's *Arithmetic*, Book III, Sects. III to VI, inclusive.
Speer's *Elementary Arithmetic*, pp. 56–104.
Shelves: See II *a.*
Combination Cards: large and small. The cards should contain all the facts of the multiplication tables 11 and 12, also the most difficult combinations from the other multiplication tables. As: —

12 × 1	12 ÷ 1	24 ÷ 2
1 × 12	12 ÷ 12	24 ÷ 12, etc.
12 × 2	12 ÷ 2	
2 × 12	12 ÷ 3	

For use of cards, see directions in I B.
Wheels for Multiplication and Division:
See directions under II A.
Chart for Adding and Subtracting:
For directions, see II B and II A.
Add and subtract 6's, 7's, 8's, 13's, 14's, 16's, 17's, 18's, and 19's.
Review other numbers under 20.
Chart for Fractions shows all fractions already assigned.
Miscellaneous Drill Cards:
For directions, see I A.
From the system ranking best in concreteness.
Mathematics: If the children are actually doing work which has social value, they must gain accurate knowledge of the activities in which

they are engaged. They will keep a record of all expenses for materials used in the school, and will do simple bookkeeping in connection with the store which has charge of this material. In cooking, weights and measures will be learned. The children will also keep accounts of the cost of ingredients. Proportions will be worked out in the cooking recipes. When the children dramatize the life of the trader, in connection with history, they have opportunity to use all standards of measurements. Number is demanded in almost all experimental science work; for instance, the amount of water contained in the different kinds of fruit, or the amount of water evaporated from fruits under different conditions (in drying fruits). All plans for wood work will be worked to a scale and demand use of fractions. When the children have encountered many problems which they must solve in order to proceed with their work, they are ready to be drilled on the processes involved until they gain facility in the use of these. The children should be able to think through the problems which arise in their daily work, and have automatic use of easy numbers, addition, subtraction, multiplication, short division, and easy fractions.

As one reads these two samples of excellence he must find that each is so excellent in its one strong feature that it is not good; that work according to either must suffer; that what each needs is what the other has. Such a synthesis is represented in the next illustration.

A Combination of Excellences

September. 1. Measure height, determine weight. From records determine growth since September, 1905. 2. Learn to read thermometer. Make accurately, scale one fourth inch representing two degrees on paper one inch broad. Find average temperature of different days of month. Practice making figures from 1 to 100 for the thermometer scale. Count 100 by 2's. 3. Make temperature chart. 4. Measure and space calendar, making figures of size appropriate to inch squares. Learn names of numbers to 30. 5. Make inch-wide tape measure for use in nature study, number book and cubic-inch seed boxes. 6. Review telling time. A. In addition to above; analyze numbers from 11 to 40 into tens and ones. Walsh's *Primary Arithmetic* to top of page 10.

October. Problems on calendar, — number of clear, of cloudy, and of rainy days in September. Compare with September, 1905, 1904, 1903, 1902; temperature chart and thermometer; height and weight. Lay off beds for tree seeds; plant the same. Make envelopes for report cards. Drill on combinations in the above. Make rod strings and hundred-

foot strings for determining distance wing seeds are carried from plants. Practice making figures from 1 to 100 for thermometer scale. Develop table of tens. A. In addition to the above analyze numbers from 40 to 50 into tens and ones. *Primary Arithmetic*, pp. 10–22. Teach pupils to *add at sight.*

November. From wall calendar count number of clear days, of cloudy days, and rainy days in October. Compare with September; with October of 1905, of 1906. Find average daily temperature; 8.30 A.M., 1 P.M. What kind of trees grow fastest? Measure growth of twigs of different kinds of trees. Compare this year's growth with that of last year and of year before last. Compare rate of growth of different kinds of trees, as oak, willow, Carolina poplar, and elm. Develop table of 5's from lesson with clock dial; review 2's and 10's. Practice making figures from 1 to 100 for the thermometer scale. Learn words representing numbers as well as figures. Make seed envelope. A. Analyze numbers from 60 to 65 into tens and ones. *Primary Arithmetic.* B, pp. 17–26; A, pp. 39–49.

Last six weeks of first term. — Continue finding average daily temperature. From wall calendar count number of clear, of cloudy, and of rainy days in November. Compare with November, 1906, 1905. Continue measurements on growth of trees. Drill on telling time from clock dial. Practice making figures from 1 to 100 for thermometer scale. Continue learning words representing numbers. Review tables of 2's, 5's, 10's; learn table of 3's. *Primary Arithmetic.* B, pp. 27–40. Analyze numbers from 11 to 30 into tens and ones. *Primary Arithmetic.* A, pp. 49–61. Analyze numbers from 66 to 100 into tens and ones. In January review all facts in number book. Drill on tables.

(Only the first one half of the third year's course shown.)

The system from which this last selection is taken had the following remarkable rankings: 3d best in general excellence, 2d best in concreteness, and 5th best in drill. And as measured by the tests of this study, this system stood 4th from the best in abilities, and spent a little less than the medium amount of time.

CHAPTER XIX

MEASURING RESULTS IN EDUCATION

Efficiency in any line of human endeavor depends upon our ability to evaluate the results which are secured. No one would question the progress which has been made in education during the past hundred years; but one may very justly inquire concerning the efficiency of the work that has been done from the standpoint of the money which has been spent, and the effort and devotion of those who have engaged in teaching. In the mercantile pursuits it has been noted that seven out of every ten failures can be charged directly to a lack of knowledge of facts. Such investigations as we have had in education tend to prove that a like situation is to be found in this field. The failures in education, whether due to a lack of economical use of the funds available, to an inefficient system of organization, or to unintelligent practices in method, are, on the whole, not to be charged to a lack of devotion on the part of those who have given their lives to the schools. Until it is possible to measure the results achieved, the facts of success or failure cannot be established.

Of course, no one would deny that real progress is made by the process of trial and success, both in the art of teaching and in the practice of administration. It is true, too, that we shall have to depend in considerable measure upon demonstration as a means of bringing about improvement in current educational practice. It is none the less true, however, that scientific work in education will furnish the basis for the more rapid elimination of the mistakes in current practice, as well as point the way for improved organization of teaching. The science of education will, in its development, occupy relatively the

same position with reference to the art of teaching that the science of medicine occupies with respect to the art of healing. The progress which has been made during the past twenty-five years in the art of farming would never have been possible without the scientific work that has been done in agriculture.

Aside from the fact that we are only beginning to have a profession of education, many other factors have entered to delay the progress in the direction of standardizing our work by means of accurate measurement of the results achieved. One of the most comforting of the fallacies which are at times urged against the attempt to measure results is found in the popular statement that the only criterion by which the success of school work can be measured is found in the ultimate success of the individuals who are subjected to the process. The most inefficient teacher in the most poorly equipped school, if his period of service has been long enough, will point to the success of a few of the boys who once attended that particular school, as proof of the adequacy of the work which is now being done. The failures are never brought to mind. The fallacious reasoning found in such an appeal is all too common in our educational discussion. To take a selected group of individuals, who have, because of native ability, and possibly because of favorable environment, achieved distinction; and to claim that this success is due to our system of education, may be satisfying to our pride, but cannot appeal to our good judgment. The only available measure of the success of the work done in any particular school is to be found in the changes which are brought about in boys and girls, young men and young women, during the period of their school life.

It has been argued, too, that that which is most worth while in education cannot be measured. Those who advance this argument speak continually in terms of "atmosphere," "spirit," and the like. There are two replies to be made to this contention. The one is that any power which the teacher has, whether it is called influence, or ability to teach arith-

metic, must result in some change in the children who are taught. Another equally valid answer is to be found in the fact that the best teachers of arithmetic, of literature, of geography, of history, and the other studies are, at the same time, the teachers whose influence we value most in the school.

We have been hopeful that the sciences of biology, psychology, sociology, and economics would, in their development, solve the problems of education. No one would deny the significance of the work done in these fields as fundamental to the development of scientific work in education. No one is fully equipped to undertake investigation in the field of education without preliminary training in these fundamental sciences. Progress in the science of education has come, however, through the efforts of those men of sound fundamental training who have attacked the problems of education as such, rather than through the work of the biologist, psychologist, sociologist, or economist. If we should wait for the sciences mentioned to solve our problems, progress would indeed be slow.

Those who are unacquainted with modern statistical methods as applied in the social sciences have at times felt that it was impossible to measure large groups of individuals who differ in ability, in interest, and in environment. It is impossible within the limits of a brief chapter to make clear the validity of such measurement. It may be confidently asserted, however, that the measurement of a large group of individuals is, on the whole, more satisfactory than the attempt to measure a single individual. We can be more sure of the accuracy of our results in comparing two groups of children of a thousand each, than we could in the attempt to measure accurately a single individual with regard to ability in school subjects.

A most persistent objection to the measuring of results comes from those who feel that it is not fair to compare individuals or groups who are not alike in all particulars. They would claim, for example, that we cannot compare children in spelling

ability when one group comes from homes in which the English language is spoken, while the other comes from the homes of those who speak a foreign language. It is probable that this objection is due to a belief that measurement will result in a comparison of the present situation without any regard to the growth or development which has characterized the group. If we derive units of measurement in spelling, manifestly the attempt would be to measure the changes which have been brought about in any group in terms of units which are comparable. If group one shows ability ten, having advanced during the year from ability seven, it will be considered just as satisfactory as the advance which has been made in group two, which has moved from ability eight to ability eleven. In other words, the purpose of measurement is never to attempt to make all alike. It is rather to discover differences and the reason for their existence; but most of all to give us some adequate means of determining progress or change.

Let us suppose again, in a matter of business administration, that one school shows a much higher per capita cost than another. This does not prove that one school is more efficiently managed than another. What it does do is to suggest that some adequate reason is to be found for the difference which exists. In like manner, one city may show a much higher cost for janitors' salaries than does another. This may suggest investigation, but it does not prove that the city with the higher cost for janitors' service is inefficiently managed or extravagant in its expenditures. It may be that the city that spends a relatively large amount for janitorial service actually gets more per dollar for the money which it spends than does the city with the smaller cost. It is always a purpose of measurement to discover discrepancies and to raise problems.

It has been contended that it is not important to derive scales or units of measurement on the ground that the scientific study of education is significant only in so far as it has to do with a careful investigation of the processes involved in growth.

Those who make this contention seem to feel that a careful study of the way in which children come to form habits, to grow in power of reasoning, or in ability to appreciate, will give us the final answer concerning the methods to be employed in teaching. The difficulty with this point of view is that human beings, even though they be trained in investigation, are fallible. The only final test of the success of any method, however carefully derived, and however much of it may depend upon a knowledge of the processes involved in growth in the particular aspect of mental life which is involved, is to be found in the result achieved. Theoretically a method may seem to be perfect, and yet in terms of the results which are secured it may prove to be a failure. If the results are not accurately measured, if we do not derive scales of measurement, we can never be certain of our conclusions with regard to the method to be employed in bringing about any particular type of mental growth or development.

Possibly the one element in the situation which has operated to retard development in the direction of accurate measurement of results, more than any other, is the tendency in education to appeal to authority, and the corresponding lack of devotion to scientific investigation. It is, of course, much easier to solve the problems which one meets by taking the opinion of those who have had experience in the field. No one would deny the value of the judgment of our great educational leaders. The fact remains, however, that these same leaders would be the last ones to place their own opinion in opposition to the results obtained from a careful scientific investigation. Indeed, it is in no small measure due to the insistence of these leaders that we are coming to have adequate investigations with regard to our educational practice.

It has seemed necessary to discuss at some length the objections which have been made against the attempt to measure results in education, rather than to devote more space to a discussion of the work which has already been done. All students

of education are familiar with the early work of Rice, and with the later contributions of Thorndike, Ayres, Cornman, and many others who have contributed to the literature of educational investigation. Possibly the most significant piece of work that has been done is Thorndike's scale for measuring handwriting.[1] We may reasonably hope to have scales derived for the measurement of abilities in other subjects.

In administration, considerable work has already been done with reference to the cost of education, both as regards the relationship of expenditure for education to other expenditures, the question of a proper distribution of money within the educational budget, and of the proper distribution of state school funds.[2] We can, of course, hope for much more significant work in this field as more adequate systems of accounting are introduced and more satisfactory reports are issued. It is noteworthy that in those school systems in which an attempt has been made to check up expenditures carefully, remarkable savings have been made. We have not yet reached the limit of possible reduction of expenditure without the sacrifice of our present efficiency. Much work has been done on problems of school organization, yet the problems of retardation and elimination will be satisfactorily treated only as we secure more accurate records concerning attendance, scholarship, health, promotions, and demotions, such as are provided for by the genetic records now kept in some of our more progressive school systems. The problems of departmental work and individual instruction can never be satisfactorily solved until we measure accurately the results secured under different systems of organization.

Implicit in all of the argument which has been advanced in favor of measuring results is the contention that education means change. If changes are brought about in the children

[1] E. L. Thorndike, "Handwriting," *Teachers College Record*, Vol. XI, No. 2.

[2] Cubberley, *School Funds and their Apportionment;* Elliott, *Fiscal Aspects of Education;* Strayer, *City School Expenditures.*

who are being educated, then there must be the possibility of measurement. These changes may take place in habit, in knowledge, in methods of work, in interests and ideals, and in power of appreciation. Probably no one would question the possibility of measuring the change which takes place in the formation of habits. We have quite commonly been willing to measure growth in knowledge by tests which demand that students not only remember facts, but that they show some ability to apply them. Whether or not a student commands a particular method of work can be determined by observation of his method of procedure as well as by the results that he secures. If interests or ideals are changed, there necessarily follows a change in activity. Any real power of appreciation will be accompanied by some change in expression.

The fact that we do not yet have scales or units of measurement which will enable us to evaluate accurately the results obtained in all of the different forms of school activity is not an argument against the possibility of measurement. In any field the development of units of measurement is dependent upon careful investigation, and upon a realization of the imperfection of the units already used. It is only as we insist upon measurement that we can hope to have our units refined. Take for example the problem of grades or marks which are commonly assigned to students as a measure of their efficiency in doing school work. Any investigation of these units will show that there is very great variation in their application by different members of the teaching corps.

The way to bring about a remedy is not to abolish all marks or grades, but rather to study the problem of the proper distribution of marks, and, if necessary, to weigh differently the marks of different instructors. The more imperfect the unit of measure which we now apply, the greater the need for insisting upon accurate measurement.

The first step in the development of scientific inquiry in any field is found in accurate description of the phenomena in-

volved. The demand that we measure results in education is simply a demand that the basis for scientific investigation be made available by means of this accurate description of the situation as it exists. Some investigators in education have already been able to take the further steps in scientific inquiry which have enabled them to foretell with considerable accuracy the results which might be expected in education under given conditions. Further progress is, however, dependent upon that sort of measurement which will discover problems which are not now clearly defined or which have not yet been thought of. Of course, as inferences are made in the light of the problems suggested, there will be still further necessity for accurate measurement. When those who are charged with the responsibility of determining educational policy appeal to fact rather than to opinion, when we are able to evaluate accurately that which we achieve, educational progress will be assured and a profession of education will have been established.

We shall always have most excellent work in teaching done by those for whom scientific investigation, as such, means little. The investigations made will, however, modify the practice of these same teachers through changed demands and because of the demonstration of the validity of the new method of work by those who can appreciate the significance of results achieved by investigators. It is certainly to be expected that open-minded teachers will experiment for themselves and will aid in the work of the expert who must use the schools as his laboratory. Much depends upon the coöperation and good will of all who are engaged in teaching. It is not too much to expect that the spirit of investigation will be found in large measure to characterize those whose privilege it is to provide the situation in which intellectual development is stimulated.

An example of a study involving the coöperation of the pupils, teachers, and supervisory officers of twenty-six separate schools or school systems is Dr. C. W. Stone's study on *Arithmetical Abilities and Some of the Factors Determining them.*

The following quotations from Dr. Stone's study indicate the type of result which we may hope to get from such investigations.

In Reasoning

The scores for the reasoning problems were determined from the results of two preliminary tests — one, giving one hundred 6th grade pupils all the time they needed to do the problems as well as they could in the order as printed (see page 11); and another, giving one hundred 6th grade pupils all the time they needed to do the problems as well as they could in the *reverse* order from that as printed. The results as tabulated below in table II show that scores for reasoning problems of Grade VI pupils can be very definitely arranged in a scale on the basis of relative difficulty. Just what the scale should be can only be determined by determining the form of distribution and the location of the zero point. From what is known of these the scale of weighting shown in the last column of table II is believed to be the best, and this is the one employed in the computations of this study. However, in order to enable the reader to satisfy himself as to which is the best method, the scores of the twenty-six systems were calculated on each of three other bases — (1) counting each problem reasoned correctly a score of 1; (2) counting each problem reasoned correctly a score based on the ratio of its difficulty as shown in the next to the last column of table II; and (3) counting the scores made on only the first six problems for which presumably all pupils of all systems had ample time. See Appendix, p. 98.

In both reasoning and fundamentals the scores used as a measure of the achievement of a system were computed by combining the scores of one hundred pupils. Where more than one hundred pupils were tested, the papers used were drawn at random, the number drawn from each class being determined by the ratio of its number to the total number tested in the system. Where less than one hundred pupils were tested, the combined scores made were raised to the basis of one hundred pupils.

TABLE II

PRELIMINARY TESTS

REASONING — UNLIMITED TIME

100 Different Pupils Tested Each Time

NUMBER OF PROBLEMS	% REASONED CORRECTLY AS PRINTED	% REASONED CORRECTLY AS REVERSED	AVERAGE % REASONED CORRECTLY	WEIGHT ACCORDING TO AVERAGE % CORRECT	WEIGHT USED AS PROBABLY THE BEST
1	95	92.6	93.8	1	1
2	86	82.2	84.1	1.1	1
3	94	89	91.5	1	1
4	80	83	81.5	1.15	1
5	88	86	87	1.1	1
6	69	57.4	63.2	1.5	1.4
7	70	80	75	1.25	1.2
8	29	44	36.5	2.6	1.6
9	19	15.5	17.2	5.45	2
10	24	27.4	25.7	3.6	2
11	17	7.5	12.3	7.6	2
12	7	16.4	11.7	8	2

Precautions observed to make the Scoring Accurate

The simplicity of the tests made the scoring comparatively easy; and with the observance of the following precautions it is believed that a high degree of accuracy was attained. (1) In so far as practicable, all the papers were scored by a single judge — only two persons being employed on any phase of the work for the entire twenty-six systems; (2) each problem was scored through one hundred or more papers, then the next followed through, etc.; (3) the score for each part of each problem, the errors, etc., were entered on a blank provided with a separate column for each item; (4) where there was doubt as to how the score should be made, the scorer made a written memorandum of how the case was finally decided and this memorandum served as the guide for all future similar cases.

What the Scores Measure

As used in this study the words *achievements*, *products*, *abilities*, except where otherwise qualified, must necessarily refer to the results of the particular tests employed in this investigation. That some systems may achieve other and possibly quite as worth-while results from their arithmetic work is not denied; but what is denied is that any system can safely fail to attain good results in the work covered by these particular tests. Whatever else the arithmetic work may produce, it seems safe to say that by the end of the sixth school year, it should result in at least good ability in the four fundamental operations and the simple, everyday kind of reasoning called for in these problems. It does not then seem unreasonable, in view of the precautions previously enumerated, to claim that the scores made by the respective systems afford a reliable measure of the products of their respective procedures in arithmetic.

The Data

The source of the data used to help answer the above questions is some six thousand test papers gathered from twenty-six representative school systems. Copies of the tests may be found in Part I, pages 10 and 11; as may also a statement of conditions under which the tests were personally given by the author, page 13; and the method of scoring, pages 15 to 18.

The achievements are considered from two standpoints — (1) the scores and mistakes of the systems as systems, (2) the scores of individual pupils as individuals.

Table III gives the scores made in reasoning by each of the twenty-six systems, counting all the problems that were solved, and weighting them according to the last column of table II. The Roman numerals used in the left-hand column to designate the systems are those that fell to each system by lot. As seen by the column headed *scores made*, the systems are arranged according to number of scores, *i.e.* system XXIII made three hundred fifty-six points, the lowest score, and is placed first in the table; system XXIV made four hundred twenty-nine points, and is placed second, etc. System V, having made the highest score, is placed last in the table.

The middle column gives the deviations from the median, which is that measure above and below which one half the cases lie. In this table the median is five hundred fifty-one. These deviations serve to

ACHIEVEMENTS OF THE SYSTEMS AS SYSTEMS

Measured by Scores Made

TABLE III[1]

Scores of the Twenty-six Systems in Reasoning with Deviations from the Median. Scores from all Problems
$M^2 = 551$

Systems in Order of Achievement	Scores Made[3]	Deviations from the Median	Deviations in Per Cent of the Median
XXIII	356	−195	−35
XXIV	429	−122	−22
XVII	444	−107	−19
IV	464	−87	−16
XXV	464	−87	−16
XXII	468	−83	−15
XVI	469	−82	−15
XX	491	−60	−11
XVIII	509	−42	−8
XV	532	−19	−3
III	533	−18	−3
VIII	538	−13	−2
VI	550	−1	−2
I	552	1	2
X	601	50	9
II	615	64	12
XXI	627	76	14
XIII	636	85	15
XIV	661	110	19
IX	691	140	20
VII	734	183	33
XII	736	185	34
XI	759	208	38
XXVI	791	240	44
XIX	848	297	54
V	914	363	66

TABLE IV

Scores of the Twenty-six Systems in Fundamentals with Deviations from the Median. Scores from all Problems
$M = 3111$

Systems in Order of Achievement	Scores Made	Deviations from the Median	Deviations in Per Cent of the Median
XXIII	1841	−1270	−41
XXV	2167	−944	−30
XX	2168	−943	−30
XXII	2311	−800	−26
VIII	2747	−364	−12
X	2749	−362	−12
XV	2779	−332	−11
III	2845	−266	−8
I	2935	−176	−6
XXI	2951	−160	−5
II	2958	−153	−5
XVII	3042	−69	−2
XIII	3049	−62	−2
VI	3173	62	2
XI	3261	150	5
IX	3404	293	9
XII	3410	299	10
XXIV	3513	402	13
XIV	3561	450	14
IV	3563	452	14
V	3569	458	15
XXVI	3682	571	18
XVI	3707	596	19
XVIII	3758	647	21
VII	3782	671	22
XIX	4099	988	31

Footnotes on opposite page.

show the differences in scores made; and they are also employed in computing the measures of variability and relationship. The third column is the deviations in per cent of the median. It affords another expression of the difference in size of scores made by the systems.

Table IV reads exactly as III, the scores[2] being those made on all problems of the test in fundamentals. These two tables give some general help on the nature of the product of the first six years of arithmetic work. One very evident fact is the lack of uniformity among systems; another is the lack of correspondence of relative position among the systems in the two tables. With the exception of systems XXIII and XIV, no system occupies the same relative position in the two tables, *e.g.* system XXIV stands second from the lowest in reasoning and eighteenth from the lowest in fundamentals. This fact is more accurately summarized in the coefficients of correlation, table XV, p. 37.

As seen from its heading, table XXII gives the systems in order of achievements. These serial standings are derived from tables III and IV. Reading from the top, system XXIII has an average serial standing of *one*, being lowest in both reasoning and fundamentals; system XXV ranks *three* in average serial standing, being *fourth* from lowest in reasoning and *second* from lowest in fundamentals; the readings for the other systems are similar.

Tables XXIII and XXIV keep the same order of systems and show

[1] In proceeding to the part of the study that is necessarily largely composed of tables, it may be well to state the position of the author regarding the partial interpretations offered in connection with the tables. It is that the *entire tables* give by far the best basis for conclusions; that for a thorough comprehension of the study they should be read quite as fully as any other part; and that they should be regarded as the most important source of information rather than the brief suggestive readings which are liable to give erroneous impressions, both because of the limitations of a single interpretation and the lack of space for anything like full exposition.

[2] *M* = *Median*, which is the representation of central tendency used throughout this study. It has the advantages over the average of being more readily found, of being unambiguous, and of giving less weight to extreme or erroneous cases.

[3] For reliability of measures of reasoning ability, see Appendix, p. 100.

[2] As stated in Part I, p. 17, a *score* is arbitrarily set at *one*. The fact that the zero point is unknown in both reasoning and fundamentals makes these scores less amenable to ordinary handling than they might at first thought seem. Hence, entire distributions are either printed or placed on file at Teachers College.

TABLE XXII TABLE XXIII TABLE XXIV

Systems	Comparative Achievements			Comparative Time Expenditure				Time Distribution among Grades					
								Lower numbers show week minutes devoted to arithmetic; upper show % of school time devoted to arithmetic in each grade					
	Average serial standing	Serial standing in reasoning	Serial standing in fundamentals	Serial standing in time expenditure	Week minutes devoted to arithmetic	Week minutes devoted to all subjects	% of time to arithmetic	I	II	III	IV	V	VI
								7	6	12	15	15	15
XXII . .	1	1	1	14	1150	9675	12	100	100	200	250	250	250
									7	9	10	9	13
XXV . .	3	4	2	2	722	8700	8	..	100	140	155	130	197
									8	8	8	7	11
XXII . .	4½	5	4	1	507	7200	7	..	90	90	90	90	147
								7	10	12	14	15	15
XX . . .	5	7	3	15	1161	8200	14	80	113	210	240	265	253
								2	12	20	20	24	23
XVII . .	7½	3	12	21	1283	7500	17	27	158	250	258	300	290
								2	14	15	15	15	15
VIII . .	8	11	5	18	1258	9600	13	25	233	250	250	250	250
									11	15	20	17	18
XV . . .	8	9	7	16	1173	8025	15	..	147	213	292	250	271
								10	9	11	11	12	16
III . . .	9	10	8	6	944	8025	12	125	125	150	150	165	229
										14	17	17	17
XXIV . .	10	2	18	7	950	8775	11	..	..	200	250	250	250
									7	12	12	14	18
X . . .	10	14	6	5	921	8550	11	..	88	154	184	216	279
									9	13	14	14	15
I	11	13	9	9	1068	9375	11	..	130	213	238	238	249
								28	20	20	24	20	23
IV . . .	12	4	20	26	1854	8400	22	249	300	306	361	300	338
								8	12	14	14	15	16
II . . .	13	15	11	17	1247	9900	13	121	192	217	225	233	259
								8	10	10	12	14	13
XXI . .	13	16	10	4	865	7650	11	80	100	100	180	210	195
									8	12	18	18	19
VI . . .	13	12	14	11	1126	9000	13	..	127	177	266	266	290
								5	8	13	18	17	16
XVI . .	14½	6	23	12	1127	9000	13	75	113	187	263	251	238
									26	23	18	19	19
XIII . .	15	17	13	25	1626	8475	19	..	388	350	288	300	300

Systems	Comparative Achievements			Comparative Time Expenditure				Time Distribution among Grades					
	Average serial standing	Serial standing in reasoning	Serial standing in fundamentals	Serial standing in time expenditure	Week minutes devoted to arithmetic	Week minutes devoted to all subjects	% of time to arithmetic	Lower numbers show week minutes devoted to arithmetic; upper show % of school time devoted to arithmetic in each grade.					
								I	II	III	IV	V	VI
								6	5	15	20	20	19
XVIII . .	16	8	24	19	1265	8700	15	75	75	225	300	300	290
								13	15	18	18	18	21
IX . . .	17½	19	16	22	1559	9000	17	200	225	275	275	275	309
									11	15	18	18	18
XI . . .	18½	22	15	10	1130	8575	13	..	157	216	250	250	257
								15	16	18	19	19	19
XIV . .	18½	18	10	23	1560	8850	18	225	245	270	280	270	270
									6	18	16	19	19
XII . .	19	21	17	13	1148	8400	14	..	81	226	255	288	298
								7	10	10	13	13	17
XXVI . .	22½	23	22	3	837	7200	12	80	125	125	150	150	207
								13	19	22	22	22	17
VII . . .	22½	20	25	24	1573	7800	20	175	262	300	300	300	236
								8	10	11	12	13	13
V . . .	23	25	21	8	971	8700	11	113	154	167	175	183	179
								8	10	17	17	13	20
XIX . .	25	24	26	20	1276	9000	14	125	150	250	250	250	301

.. = no time assigned.

the time expenditure. The first line of table XXIII reads, — system XXIII ranks fourteenth from the lowest in time expenditure, with 1150 week minutes devoted to arithmetic, 9675 week minutes devoted to all subjects, the 1150 week minutes devoted to arithmetic being 12 per cent of the 9675 week minutes devoted to all subjects. Similarly for the other systems, *e.g.* system XXV with a serial standing in abilities of *three*, and a serial standing in time expenditure of *two*, spends 722 week minutes on arithmetic, and 8700 week minutes on all subjects, arithmetic costing 8 per cent of all the school time. The reader will recognize that the third column, which gives the time devoted to all subjects for one week of each of the first six years, gives the only new data of this table, column two being the same as given in table XXI and the first and fourth columns being derived from the others.

Probably the first essential shown by this table is the lack of correspondence between the serial standing in time cost and the serial standing in abilities; *e.g.* the system with the lowest time cost is found by referring to table XIII to be system XXII, which is seen in table XXII to rank *four and one-half* in average abilities. Similarly, the system that ranks *fifteenth* in time cost, ranks *fifth* in abilities, etc. Another noticeable showing is the wide variability in the *school time* of the systems. It will be seen to vary from 7200 to 9900 week minutes. This time includes recesses, and it means that lengths of school days vary from an average of four hours to five and one-half hours. And if the names of the systems were given, it would be recognized that almost invariably the longer school hours are accompanied by the least amount of variation in program, such as physical education, field trips, assemblies, etc. Perhaps the other most striking fact of this table is the wide variation in the per cent of time devoted to arithmetic. It varies from 22 per cent for system IV to 7 per cent for system XXII, a difference of more than three to one.

As table XXIV is part of the discussion of factors in time expenditure, its sample readings are given under that heading, page 62.

The Relation of Time Expenditure to Abilities Produced

The reader found one indication of the relation, or lack of relation, between time cost and products in tables XXII and XXIII. Each of the three following tables expresses these same facts.

TABLE XXV

COMPARISON OF THE ACHIEVEMENTS OF THE SYSTEMS HAVING LESS THAN MEDIAN TIME COST WITH THOSE HAVING MORE

	Combined Scores of the Thirteen Systems			
	With *less* than median time cost	With *more* than median time cost	With *less* than median time cost	With *more* than median time cost
	Including home study		Without home study	
Reasoning	7,519	7,893	7,277	8,135
Fundamentals	40,751	40,273	37,165	43,859

The above details are compiled from the scores of individual systems as given in tables III and IV, the median cost being that given in table

TABLE XXVI

RATIO OF TIME EXPENDITURES TO ABILITIES[1]

SYSTEMS	AVERAGE RATIOS		REASONING RATIOS		FUNDAMENTAL RATIOS	
	Serial Standing of Systems	Time Cost to Reasoning and to Fundamentals	Serial Standing of Systems	Time Cost to Reasoning	Serial Standing of Systems	Time Cost to Fundamentals
IV	1	2.26	1	3.99	4	.520
XXIII	2	1.92	2	3.22	1	.624
XVII	3	1.65	3	2.88	7	.421
XIII	4	1.54	4	2.55	3	.533
XX	5	1.45	7	2.36	2	.535
XVIII	6	1.41	5	2.48	13	.336
XIV	7	1.40	7	2.36	6	.438
VIII	8	1.39	8	2.33	5	.457
IX	9	1.353	9	2.25	5	.457
XVI	10	1.352	6	2.40	18	.304
XV	11	1.31	11	2.20	8	.422
VII	12	1.28	12	2.14	9	.415
XXIV	13	1.24	10	2.21	21	.270
II	14	1.22	14	2.02	7	.421
VI	15	1.20	13	2.04	11	.354
I	16	1.15	15	1.93	10	.363
III	17	1.05	16	1.77	16	.331
XII	18	0.943	17	1.55	13	.336
XXV	19	0.941	17	1.55	15	.333
X	20	0.93	18	1.53	14	.335
XI	21	0.913	20	1.48	12	.346
XIX	22	0.91	19	1.50	17	.311
XXI	23	0.83	21	1.37	19	.293
V	24	0.67	23	1.06	20	.272
XXII	25	0.65	22	1.08	23	.219
XXVI	26	0.64	24	1.05	22	.227

[1] For the data from which these calculations were made, see first column of table XXI, p. 52, and the first columns of tables III and IV, p. 21. The absence of known zero points makes such computations inadvisable except in connection with the more reliable evidence of the preceding table.

XXI. As measured by the time used in school, the thirteen systems with less than the median cost stand slightly the better; and as measured by the time including home study, the thirteen systems with more than the median time cost stand somewhat the better. The time used in school is doubtless the more exact measure, but, as shown in table XXI, some systems depend on home study to a considerable extent. Hence both measures are used. The lack of relation indicated in this general way is shown more accurately in the table, page 263, in terms of coefficients of correlation.

The order of systems in this table is determined by the first column, which gives the average serial standing as determined by the ratios of time to products. The right-hand column under each heading gives the ratio of time expenditure to abilities produced, and the left-hand column gives the serial order of that system as measured by the highness of the ratio, *i.e.* highness of cost per unit of product; *e.g.* in system IV the ratio of time to reasoning is 3.99 (see fourth column), the highest ratio in reasoning (determined by dividing the time cost, 1854 week minutes, by 464, the points made in reasoning). The ratio of time to fundamentals in this system is .52; giving an average ratio of 2.26. That is to say, the ratio of time to abilities in system IV is as 2.26 to 1, the highest among the twenty-six systems.

That there is no direct ratio between time expenditure and abilities is again shown by this table. For example, system XXII, which spends the least amount of time (see table XXI), ranks fourth from the lowest in abilities (see table XXII), ranks 25th, that is, next to the highest, in ratio of time cost to abilities produced; and, what is even more striking, system XXVI, which spends third from the least amount of time, ranks third from the highest in abilities and 26th or *highest* in the ratio of time cost to abilities produced.

That a large amount of time expended is no guarantee of a high standard of abilities may again be convincingly seen by comparing the ratios of the five systems spending the smallest amount of time with the five spending the largest. Of the five spending the least time, the average ratio is .80, which corresponds with the 23d or the 3d from the best in ratio; and of the five spending the greatest amount of time, the average ratio is 1.57, which corresponds with the 4th poorest in ratio.

The last three tables have each shown the decided lack of relationship between time cost and abilities produced, and hence for these systems it is evident that there is practically no relation between time expenditure and arithmetical abilities; and, in view of the representative nature of these twenty-six systems, it is probable that this lack of relationship is the rule the country over.

This is not to say that a certain amount of time is not essential to the production of arithmetical abilities; nor that, given the same other factors, operating equally well, the product will not increase somewhat with an increased time expenditure. What is claimed is that, as present practice goes, a large amount of time spent on arithmetic is no guarantee of a high degree of efficiency. If one were to choose at random among the schools with more than the median time given to arithmetic, the chances are about equal that he would get a school with an inferior product; and conversely, if one were to choose among the schools with less than the median time cost, the chances are about equal that he would get a school with a superior product in arithmetic.[1]

So far, then, as ability in arithmetic means ability to handle such foundation work as is measured by the tests in this study, this "essential" has not *necessarily* suffered by the introduction of other subjects and the consequent reduction of its time allotment.

One would need to read the whole study to appreciate fully the nature of the investigation. From the pages quoted, however, it must be apparent that: (1) schools and school systems vary greatly in the results which they secure in arithmetic; (2) the excellence of the work done is not directly proportional to the time expended. We will find it necessary to revise our opinions with regard to the organization of school subjects, the allotment of time, the methods of teaching, and the like, in proportion as we have careful investigation in these several fields.

For Collateral Reading

E. L. Thorndike, *The Principles of Teaching*, Chapter XVI.

[1] And it is the opinion of the author that the chances are much better that one would get a school with a superior product in *education.*

APPENDIX

I. THE TEACHING OF ENGLISH IN ELEMENTARY SCHOOLS

By Franklin Thomas Baker, A.M.

I. Historical View of the Subject

1. The Choice of Reading Matter.

1. The school reader an expression of social ideals.
2. German primers and readers of the sixteenth and seventeenth centuries.
3. The "moral tales" of the eighteenth century.
4. The New England Primer.
5. The oratorical and patriotic selections of the early nineteenth century.
6. The school readers of to-day; their general characteristics.

2. Method.

1. The alphabetic method in use until modern times.
2. New ideas in the sixteenth century and later. Work of Ickelsamer, Basedow, Pestalozzi, Comenius, and Jacotot.
3. Gradual ascendency of the analytic over the alphabetic (or synthetic) method.
4. Recognition of the importance of phonetics, of association of ideas, etc.

References: Kehr, *Geschichte des Lese-Unterrichts in der Volksschule*, Gotha, 1889. Fechner, *Geschichte des Volksschullesebuches*, Gotha, 1889. Ford, *The New England Primer*, New York, 1897. Reeder, *Historical Development of the School Reader*, New York, 1900. Hall, *How to Teach Reading*, New York, 1886. *American Journal of Education, Vol. V.*, Hartford and London, 1858. Russell, *German Higher Schools*, New York, 1900. Carpenter, Baker, and Scott, *The Teaching of English*, New York, 1903. Huey, *Psychology and Pedagogy of Reading*, New York, 1908.

II. First Steps in Instruction

1. Material.

1. Material should be (1) interesting, (2) literary, so far as possible, (3) adapted to the capacities and tastes of children, (4) of enough difficulty and sufficiently above their own ordinary thoughts to have value as instruction.
2. The best material (1) folk stuff, such as the classic fairy tales, Mother

Goose, etc., (2) tales of heroism and sacrifice, (3) poetry of the simpler type, like that of Stevenson and Christina Rossetti.

3. Much of the language work should be free conversation between the teacher and the children about their ordinary experiences.

2. METHOD.

1. During the first years much of the literary material must be given orally by the teacher. Oral work is to be held of great importance.

2. Children to be encouraged to commit good things to memory.

3. All reading aloud by the pupils to be done as naturally as possible. Importance of reading by phrases and sentences, rather than word by word.

4. Value of the dramatic element in early work.

5. The conflict between the "word method" and the "sentence method" over. Modern teaching eclectic in method. If any name can be given to the best way, it might be, perhaps, "thought method."

6. Use of script and print: advantages of each as a first form. Value of printed cards and other devices for drill.

7. Form of type for beginners' books: not too large; letters to have all differentiating marks *distinct*. Importance of right kind of paper, width of columns, etc. Kinds of pictures most serviceable.

8. When shall writing begin? In general not to be forced on the child in the first year. Arguments for and against this arrangement. Should there be any fixed standard of accomplishment for the first year?

9. Phonetic drill. How many words must be known before it begins? Various plans equally successful. The main thing, perhaps, is to have drill enough to give the pupils *certainty* in their work, but to keep the drill subordinated to their interest in reading.

10. The order of such drill. "Normal words," chosen for their meaning, their frequency of occurrence, and their similarity in form to other words either at their beginning or at their end. Many words, however, must be learned without relation to such a scheme.

11. "Normal sentences" those that partially help the reader to the recognition of words; as, "The sun rises in the east, and sets in the west." For young children, sentences involving the use of repetitive phrases must also be regarded as normal, as in "The House that Jack Built."

12. In general, both analysis and synthesis to be used in word drill.

13. Importance of securing good habits as to intelligent reading, correct spelling, etc., in the early years. Children can usually do better than they or their elders think they can.

14. Emphasis to be placed upon reading many of the good things over and over, until they are known in whole and in part.

REFERENCES: Bryant, *How to tell Stories to Children*. Carpenter, Baker, and Scott, *The Teaching of English*. Chubb, *The Teaching of English*. Colby, *Literature in Life and in School*. Hall, *How to teach Reading*. Hinsdale, *Teaching the Language Art*. Huey, *Psychology and Pedagogy of Reading*. Arnold, *Reading, How to teach it*. Laurie, *Language and Linguistic Method*. Dewey, "The Primary Education Fetich," in *The Forum*, May, 1898. Dewey, *The School and Society*. Dye, *Story-Teller's Art*.

III. The Teaching of Literature

1. General Problems.

1. Can literature be *taught?* Or can pupils "be taught through literature"? Examples of such educational use of literature.

2. Present aims in teaching literature: entertainment, portrayal of life, acquaintance with the world of thought and feeling as presented in books, cultivation of imagination and sense of beauty.

3. True interpretation implies grasping the central purpose, idea, or feeling of the piece.

4. Various types of literature demand various treatment. Necessity of adapting the treatment to the class.

5. Taste (sense of beauty) developed mainly by contact with good models. Instruction plays a minor part. The love of good reading fostered by judicious selection of material, and by example and influence.

6. How can the habit of good reading be cultivated?

2. Material.

1. The literature chosen must be suitable in its themes, its action, its feeling, its simplicity.

2. Literary histories and biographies: their limited value in elementary work.

3. Scientific and historical material in literature. Literary use of such material not to be confounded with science and history.

4. Pictures and other illustrative material: Sometimes give intuitive basis for desired concepts; sometimes interfere with the imagination.

3. Method.

1. Reading aloud: its value. Means of securing good results; interest, sense of reality, consciousness of an audience.

2. Analytic study, of content, form, and general literary effects.

   a. Must be adapted to the pupil's interest and his stage of development.

   b. Must yield results of value appreciable by the pupil.

   c. Effects of too much or too little such study.

3. Correlation of literature with other work possible in limited degree. A matter of class treatment rather than of the general arrangement of the course of study. A problem for the teacher rather than the principal.

4. Treatment of allusions, historical, literary, etc. The need of judicious selection.

5. Treatment of figures of speech, verse forms, new words, etc.

6. Lesson plans: their function and value.

   a. An outline should control and direct the work, yet be flexible enough to allow freedom on the part of teacher and pupil.

   b. Introductions: their nature and function. When necessary.

References. Carpenter, Baker, and Scott, Laurie, Chubb, Hinsdale, Arnold and Hall, as cited. Scudder, *Literature in Schools.* C. A. McMurry, *Special Method in Reading.* Bates, *Talks on the Study of Literature.* Colby, *Literature in Life and in School.* Adler, *Moral Instruction of Children.*

IV. Study of Certain Typical Books

1. Nursery Rhymes (as *Mother Goose*, Stevenson's *Child's Garden of Verses*).
a. The nature of their appeal to children in sound, imagery, and ideas.
b. Their value in training the ear, the powers of speech, etc.
2. Grimm's "Fairy Tales."
a. Their source and relation to other folklore.
b. The marvelous, and its effect on children.
c. Action, logical sequence, local color.
d. Various types of myth.
e. The ideal element, poetic justice, etc. Need the harsher elements be omitted?
f. Typical lessons.
3. "Alice in Wonderland."
a. Its origin and its place in literature.
b. The nature of its reality: based upon things in the child's world of imagination.
c. Its value as humor, as a means of quickening the power of thought.
d. What preparation is needed for the appreciation of it?
e. Typical lessons.
4. "Robinson Crusoe."
a. Its origin and place in literature.
b. Fundamental characteristics as a piece of fiction.
c. Elements in it that appeal to children, or fail so to appeal.
d. Justification of the abridged editions.
e. Its relation (1) to the world of romance, (2) to real life.
f. How best presented. Typical lessons.
5. Longfellow's "Hiawatha."
a. Its origin, form, popularity.
b. Its qualities, epic and romantic.
c. Its treatment of the myth.
d. Its value as school reading; parts best suited for this.
e. General value of reading about primitive life.
f. Relation to handwork, etc.
6. Hawthorne's "Wonder Book" and "Tanglewood Tales."
a. Their origin and general literary qualities.
b. Romantic coloring given to classic stories; compare Kingsley's *The Heroes*, and Bulfinch's *Age of Fable*, and other versions of the myths.
c. Different types of myth and fairy story represented.
d. Artistic qualities of Hawthorne's versions; how far can these be shown in the school?
e. The ethical element: how treated?
f. Typical lessons.
7. Whittier's "Snow Bound."
a. Its historical value as a presentation of a type of civilization: occupation, pleasures, interests, types of character.

b. Its literary value as an ideal treatment of its theme.

c. The point of view that of an old man's retrospect. How far is this appreciable by children?

d. The study of this poem involves also attention to structure, diction, allusions, poetic descriptions, and metrical form.

e. Typical passages treated in lessons.

8. LONGFELLOW'S "EVANGELINE."

a. The poet's departure from historical fact; its justification.

b. The idyllic element; the descriptions.

c. The central theme, and its treatment in the first and second parts of the poem.

d. The different quality of the two parts; predominance of description and the meditative element in the second.

e. Metrical structure.

f. What things in the poem can be made especially interesting to young people?

9. SCOTT'S "IVANHOE."

a. Its free treatment of historical fact. The difference between historic and poetic truth.

b. The historical novel: its general relations to history; to be regarded primarily as literature, not as history.

c. The portrayal of ideals and customs of a past age: types of characters; structure (plot) of the book built in accordance with this purpose.

d. Difficulties of language, allusions, etc.

e. Means of arousing interest in romantic literature. Comparisons with other books commonly read by children.

10. SHAKSPERE'S "JULIUS CÆSAR."

a. Historical basis, anachronisms, etc.

b. The nature of its appeal to young readers.

c. Treatment of verbal difficulties and of the dramatic form.

d. The action, the characters, the dramatic motives and situations.

V. Composition

1. OBJECT OF TEACHING COMPOSITION.

1. Shall it be "literary," or aim merely at adequate expression?

2. ELEMENTS INVOLVED IN THE PROBLEM: FORM AND SUBJECT MATTER.

1. Importance of subject matter in giving motive and interest, and in determining form.

2. Subjects for composition to include topics from school work and from daily life: to be made *real*, as far as possible. Reality dependent upon interest and the consciousness of an audience.

3. Preparation for the work. Importance of oral treatment, of the gathering and ordering of facts and ideas. Originality not to be expected.

4. Composition units: necessity of training in both sentence and paragraph. Value of outlines, and of drill in sentences.

5. Criticism of written work.
   a. General aims.
   b. Means of making criticism effective.
   c. The object to make pupils self-critical without checking spontaneity.

REFERENCES: Laurie, Hinsdale, Chubb and Carpenter, Baker and Scott as cited above.

VI. Grammar

1. HISTORICAL REVIEW.
1. Historical changes in the idea of English grammar.
2. Attempt, in the Renaissance period, to Latinize the grammar of English. Persistence of this point of view.
3. Recent changes due to philological study.
4. What now constitutes English grammar?
5. What problems remain unsolved?

2. OBJECTS OF TEACHING GRAMMAR.
1. Various theories: for correctness of expression and for discipline.
2. Modern notions of authority in usage, and of the province of grammar.

3. AMOUNT OF GRAMMAR TO BE TAUGHT.
1. How much grammar shall be taught in the schools?
2. What things are of most value?
3. Importance of syntax; of study of forms.

4. THE ORDER OF TREATMENT.
1. Syntax of etymology first?
2. A study of the methods of development adopted by some of the representative textbooks.

REFERENCES: Laurie, Hinsdale, Carpenter, Baker and Scott, and Chubb. Liddell, "English Historical Grammar," *Atlantic Monthly*, Vol. LXXXII. Sweet, *New English Grammar*, Part II. Barbour, *The Teaching of English Grammar;* Goold Brown, *Grammar of Grammars* (Introduction). Krapp, *Syllabus of English Language and Grammar* (Columbia University Extension Syllabi, Series A, No. 5).

II. THE TEACHING OF MATHEMATICS IN ELEMENTARY SCHOOLS

By DAVID EUGENE SMITH, LL.D.

I. The History of the Subject

1. ADVANTAGES TO A TEACHER IN STUDYING THE HISTORY OF THE SUBJECT TAUGHT.
2. THE EARLY HISTORY OF ARITHMETIC.
3. THE GROWTH OF NUMBER SYSTEMS.
4. THE DEVELOPMENT OF ARITHMETIC AS KNOWN AT PRESENT.

REFERENCES: Smith, *The Teaching of Arithmetic*, New York, 1909, chap. i; and in general the sections in this syllabus correspond tothe chapters in this work. *The Teaching of Elementary Mathematics*, New York, 1900. Ball, *A Primer of the History of Mathematics*, London, 1895, and *A Short Account of the History of Mathematics*, London, 4th edition, 1908. Fink, *History of Mathematics*, translated by Bennan and Smith, Chicago, 1900. Cajori, *History of Elementary Mathematics*, New York, 1896, and *History of Mathematics*, New York, 1893. On Greek Arithmetic see Gow, *History of Greek Mathematics*, Cambridge, 1884.

II. The Reasons for Teaching Arithmetic

1. THE ANCIENT POINT OF VIEW.
2. CONTENT OF THE PRIMITIVE LOGISTIC, OR ART OF CALCULATION.
a. Early counting.
b. Early writing of numbers. The development of notations. The Influence of the Hindu-Arabic notation.
3. CONTENT OF THE EARLY ARITHMETIC, OR THEORY OF NUMBERS.
a. Connection with mysticism.
b. Contributions of Pythagoras and his school.
c. The effect upon modern arithmetic.
4. THE REASONS FOR TEACHING IN THE MIDDLE AGES.
a. The Church schools.
b. The reckoning schools.
c. The effect upon modern arithmetic.
5. THE REASONS DEVELOPED BY THE RENAISSANCE.
a. Influence of commerce.
b. Influence of printing. The crystallization of arithmetic.
c. The effect upon the subject matter of modern arithmetic.
6. THE REASONS OF TO-DAY.

a. The practical value. Whatever pretends to be practical in arithmetic should really be so.

b. The question of "mental discipline." The rise of this doctrine. The results of a psychological study of the question. The tangible part of "mental discipline."

c. The interest in the subject for its own sake. The game element of mathematics. The historical development of the science of arithmetic from the primitive game.

REFERENCES: Smith, *The Teaching of Arithmetic*, chap. ii, to the chapters of which no further reference will be made, this syllabus being merely a synopsis of that work. *Teaching of Elementary Mathematics*, pp. 1–70. Young, *The Teaching of Mathematics*, New York, 1907, pp. 41–52, 202–256. On the historical side, consult Fink, *History of Mathematics*, Chicago, 1898. Ball, *Short History of Mathematics*, New York, 1908. Cajori, *History of Elementary Mathematics*, New York. Jackson, *The Educational Significance of Sixteenth Century Arithmetic*, New York, 1906. Branford, *A Study of Mathematical Education*, Oxford, 1908.

III. What Arithmetic should include

1. From the Practical Standpoint.
   a. The utilities of arithmetic overrated. A detailed consideration of the various topics usually studied.
   b. The effect of tradition upon the matter of arithmetic.
2. From the Standpoint of Mental Discipline. Discipline a Matter of Method rather than one of Topics.
3. From the Standpoint of Interest in the Subject for its Own Sake.

References: Smith, *Teaching of Elementary Mathematics*, p. 19. Young, pp. 23–242.

IV. The Nature of the Problem

1. The Great Change in Recent Years brought about by Two Causes.
   a. The study of social needs.
   b. The study of child psychology.
2. The Peculiar Needs of America. The Bearing of these Needs upon the Teaching of Arithmetic.
3. Child Psychology and the Problems still Awaiting Solution.

References: Smith, *Teaching of Elementary Mathematics*, p. 21. Young, pp. 97–103, 210–218. Saxelby, *Practical Mathematics*, and similar works.

V. The Arrangement of Material

1. Recent Changes brought about from a Consideration of Child Psychology.
2. The Growth of the Textbook.
   a. The Treviso arithmetic of 1478, and the early arithmetics of Italy, Germany, France, England, and Holland.
   b. The two-book series.
   c. The three-book series.
   d. The extreme spiral arrangement.
3. The Modern Curriculum in Arithmetic.
   a. Its origin.
   b. Its present status.
   c. Improvements to be considered.

References: Young, pp. 178–188.

VI. Method

1. The Meaning of Method.

2. How the Ancients probably taught Calculation.
a. Various forms of the abacus.
b. The abacus at the time of the Renaissance.
c. The effect upon arithmetic of abandoning the abacus in western Europe.
3. Causes of the Rise of the Rule.
4. Revival of Objective Teaching.
Trapp (1780), von Busse (1786), and Pestalozzi (about 1800).
5. The Early Followers of Pestalozzi.
Tillich (1806), Krancke (1819), Grube (1842).
6. Types of Later Methods.
a. Counting.
b. Ratio.
c. Extreme spiral.
d. Pure concrete work as a basis.
e. Pure abstract work as a basis.
7. The Ease and Futility of Creating Narrow Methods.
References: Smith, *Teaching of Elementary Mathematics*, pp. 71–97. Seeley, *Grube's Method of Teaching Arithmetic*, New York, 1888. Soldan, *Grube's Method of Teaching Arithmetic*, Chicago, 1878. C. A. McMurry, *Special Method in Arithmetic*, New York, 1905. McLellan and Dewey, *The Psychology of Number*, New York, 1895. Young, pp. 53–150.

VII. Mental or Oral Arithmetic

1. Historical Status of Oral Arithmetic.
2. Revival under Pestalozzi's Influence. The Work of Warren Colburn in this Country.
3. Causes of the Decline of this Form of Work.
4. The Claims of Oral Arithmetic upon the School To-day. The Practical and Psychological Views of the Problem.
5. The Nature of the Oral Work, — Abstract and Concrete.
6. The Time to be allowed to the Subject.
References: Smith, *Teaching of Elementary Mathematics*, p. 117. *Handbook to Arithmetics*, p. 6. Young, p. 230.

VIII. Written Arithmetic

1. What should be the Nature of the Written Arithmetic?
2. Object of the Business Form of Solution.
3. Object of Written Analysis.
4. Necessity of Recognizing Two Kinds of Written Work.
5. How to Mark Papers.
References: Smith, *Teaching of Elementary Mathematics*, pp. 121–129.

IX. Children's Analyses

1. The Object in Requiring Analyses.
2. What should be expected of Children in this Respect?
3. Explanations of Fundamental Operations. Relation to the Formal Rule.
4. Explanation of Applied Problems.
5. Relation to the Work in English.
6. The Limit of Primary Work, "Two-step Reasoning."

References: Smith, *Handbook to Arithmetics*, p. 9. Young, p. 205.

X. Interest and Effort

1. Status of Arithmetic from the Standpoint of Interest.
2. Danger of Overemphasis upon Interest.
3. Lessening of Interest with the Lessening of Effort.
4. Safe Basis for Increase of Interest.
5. Effect of a Genuine, Spontaneous Interest upon Increase of Effort and of Power.

XI. Improvements in the Technique of Arithmetic

1. History of the Improvement in Symbolism.
2. How the Present seeks to carry on this Improvement.
a. The difficulties that are met.
b. Dangers of too much symbolism.
c. The proper criterion for selection.
3. The Equation in Arithmetic.
a. Object.
b. Dangers to be avoided.
4. The Process of Subtraction as a Type.
a. The various historical methods considered.
b. The criterion for a selection.
c. The claims of the various processes to-day.
5. The Process of Division as a Type.
a. The history of division.
b. Present points at issue.
c. The probable future.
6. Proportion as a Type.
a. History of proportion and the "Rule of Three."
b. Present symbolism and status.
c. Probable future of the subject.
7. Future Problems Relating to Technique.

XII. Certain Great Principles of Teaching Arithmetic

A summary of the larger principles for the guidance of teachers.

XIII. General Subjects for Experiment

1. The Use of Games.
2. Chief Interests of Children.
3. Results of Emphasizing:
a. The abstract problem.
b. The concrete problem.
4. Amount of Time to be assigned to Arithmetic.
5. Relative Amount of Time to be devoted to:
a. Oral arithmetic.
b. Written arithmetic.
6. The Best Basis of Arrangement of an Arithmetic.

XIV. Details for Experiment

Professor Suzzallo's list of details as set forth in *The Teachers College Record*, January, 1909, p. 43, and in Smith, *The Teaching of Arithmetic*, chap. xiv.

XV. The Work of the First School Year

1. Arguments for and against no Formal Arithmetic in this Year.
2. The Leading Mathematical Features for the Year.
3. The Number Space of the Year.
a. For counting.
b. For operations.
4. The Work to be accomplished in Addition.
5. The Work in the Other Operations.
6. The Fraction Concepts to be considered.
a. Part of an object.
b. Part of a group.
c. The idea of "half as much."
7. Denominate Numbers.
8. The Question of the Use of Objects.
9. Symbolic Work and Technical Expressions.
10. Nature of the Problems of this Year.
11. The Time Limit upon Work.

References: Smith, *The Teaching of Elementary Mathematics*, p. 99. *Handbook to Arithmetics*, p. 11. C. A. McMurry, *Special Method in Arithmetic*.

XVI. The Work of the Second School Year

1. The Leading Mathematical Features.
2. Number Space for the Year.
3. Counting.
a. The origin of the "counting method."
b. The extremes to which it may be carried.
c. The proper use of counting in teaching.
4. The Addition Table. Relation to Counting.
5. The Method of Treating Subtraction reviewed.
6. The Multiplication Table.
a. Arguments for and against learning tables.
b. Extent of the work for this year.
c. Relation to counting.
7. Division.
a. Relation to multiplication.
b. Arrangement of work in short division.
8. Fractions.
a. Extent of the work.
b. Nature of the objective work.
9. Denominate Numbers.
a. Extent of the work.
b. Use of the measures. Visualizing the great basal units.
10. Nature of the Symbols to be considered.
11. Nature of the Problem Work.
a. Abstract.
b. Concrete.

XVII. The Work of the Third School Year

1. Peculiar Necessity for Preparation for this Year's Work.
2. Leading Mathematical Features.
a. Beginning of rapid written work.
b. Multiplication table completed.
c. Most important tables of denominate numbers.
d. Work extended to two-figure multipliers and the beginning of long division.
3. Number Space may extend to 100,000.
4. The Roman Numerals.
a. Extent to which this work should be carried in various school years.
b. Historical sketch of the system and of its uses.
5. The Counting Method further considered. Its Values and its Dangers.
6. The Writing of United States Money. Operations.
7. Square and Cubic Measure.
a. Extent.
b. Nature of objective work.

8. Suggestions as to Four Operations.
a. Addition. Practical value of checks on all operations.
b. Subtraction, as discussed in section XI.
c. Multiplication. Should the tables extend to 12×12? Devices.
d. Division. Algorism considered historically and practically.
e. Historical note as to the number of operations.
9. Extent of Work with Fractions.
10. Nature of the Problems.

References: Smith, *Teaching of Arithmetic*, chap. xvii, p. 73. *Handbook to Arithmetics*, p. 29.

XVIII. The Work of the Fourth School Year

1. Leading Mathematical Features.
2. Number Space.
3. The Four Operations.
a. Nature of the oral work.
b. Criteria for judging written work.
c. Speed versus accuracy.
4. Nature of the Work in Common Fractions.
a. Historical sketch of various fractions.
b. Change in the practical uses of common fractions.
5. Denominate Numbers.
a. What tables are of value? Historical sketch of tables.
b. Visualizing the basal units.
c. Accuracy in reduction.
6. Nature of the Problems.

References: Smith, *Handbook to Arithmetics*, p. 43.

XIX. The Work of the Fifth School Year

1. Leading Mathematical Features.
2. Necessity for and Nature of Preliminary Review.
3. Number Space. Modern Tendencies in Using Large Numbers.
4. Nature of the Review of the Four Operations.
a. Suggestions for rapid addition and subtraction.
b. Checks on multiplication and division.
c. Twofold nature of division.
5. Common Fractions.
a. Nature of the theoretical explanations.
b. What should be expected of children in this regard.
6. Denominate Numbers.
a. Extent of reductions.
b. Nature of the operations.
7. How to solve Problems.
8. Introduction to Percentage.

9. Nature of the Problems.
References: Smith, *Handbook to Arithmetics*, p. 53.

XX. The Work of the Sixth School Year

1. Leading Mathematical Features.
2. The General Solution of Problems.
a. How the world has solved problems.
b. Modern improvements.
3. Percentage.
a. Nature of the subject.
b. History of the subject.
c. Suggestions for treatment.
d. The most important applications.
4. Ratio and Proportion.
a. History.
b. Present value, and probable future status.
5. Nature of the Problems.

XXI. The Work of the Seventh School Year

1. Leading Mathematical Features.
2. Review of our Numbers. Historical Notes.
3. Review of the Fundamental Operations.
4. Types of Subjects Treated.
a. Longitude and time. Origin, value, new features.
b. Percentage. What cases are the most important?
5. Introduction of Algebraic Work considered. Nature of Mensuration.
6. Nature of the Problems.

XXII. The Work of the Eighth School Year

1. Leading Mathematical Features.
2. Nature of the Business Applications.
a. Banking. Extent to which the work should be carried.
b. Partial payments. Historical view of the value of the subject.
c. Partnership. Value of the historical view.
d. Simple accounts.
e. Exchange. Wherein its value lies.
f. Taxes. Insurance.
g. Corporations. Arguments for and against the study of investments.
3. The Metric System.
a. Why taught. Historical view.
b. Extent of the work.
c. Practical suggestions in teaching.

4. Powers and Roots.
a. Historical view.
b. Present values. Extent of the work.
5. Mensuration.
a. Extent to which it should be carried.
b. Geometry in the eighth year.
c. The formula.
6. Algebra in the Eighth Year.
a. Historical view. Present values.
b. Extent to which it should be carried.
7. Nature of the Problem.
8. A Comparison of American and Foreign Schools.

III. THE TEACHING OF GEOGRAPHY.

By Richard Elwood Dodge, A.M.

I. The Scope and Purpose of School Geography

1. School Geography a Part of Science of Geography.
Relation of elementary school work to that in secondary school and college.
2. Definition of Geography.
Meaning of this and growth of idea.
A. "Study of earth in its relation to *life*."
B. The emphasis of "causal notion" in school geography.
Rational geography.
3. Scope of School Geography.
A. Possible scope as wide as the subject.
Complexity of subject.
B. Practical scope determined by abilities and needs of children, and by necessary sequence of steps in geography study.
C. Consequent difficulties for school teachers, even in earlier years.
4. School Geography must be:
A. Unit in each part and as a whole.
Practical reasons for unity.
B. Usable at every step.
Importance of this in early grades.
C. Closely related to nature work on one hand, and secondary work on the other.
D. Based on children's experiences and earlier knowledge.
5. Purpose of School Geography Teaching:
A. To teach children geography. Interpretation of this.
Relation of subject to children. Approach to adults' point of view.
a. Knowledge of principles of geography.
b. Knowledge of facts that make principles clear.

c. Knowledge of facts necessary for daily life.
Other facts that must be included.

B. Power.

a. To use materials and results gained in classroom and elsewhere.

b. To seek out, organize and use new materials.
This suggests method of conducting a portion of class work.

c. To think accurately and clearly.
Importance of geography as a means of training in scientific thinking.

References: Dodge, R. E., *The Teaching of Geography*, to which no further references will be made, this syllabus being a synopsis of that work. *Teachers College Record*, March, 1901, pp. 3–9. *Journal of Geography*, November and December, 1904; April, 1905; September, 1906. McMurry, C. A., *Special Method in Geography*, chap. i. Geikie, A., *The Teaching of Geography*, chap. i.

II. The Persons involved in School Geography Teaching

1. The Duties of the Scientific Geographer.

A. Should help make content sound geographically.
He should be source of geography materials.

B. Should ascertain that work will insure good training in elements of geography.
Adapted to pupils and valuable as foundation for good later work.

C. Should outline method in large so as to produce geographic progress.

D. Should assist in substituting good for bad details and help choose between essentials and non-essentials.

2. The Obligations of the Supervisor or Superintendent.

A. Must recognize goal to be reached from standpoint of good geography, and relations of school geography to other phases of geographic education.

B. Should accept materials and larger plan of geographer.
Arrange time of schedule.

C. Should see that children's general training is not sacrificed and special training is secured.

D. Should insure that work is practical and usable.

E. Must see that relations to other subjects are emphasized.
Causal notion again.

3. The Obligations and Opportunities of the Teacher.

A. Must know more subject matter than he expects to give pupils.

B. Must know purposes and scope of course — his part in course as a whole.
Also must know preparation furnished by earlier year's work.

C. Must know relations to other work in the curriculum as a whole and in geography particularly.

D. Must know ways subject must be organized and presented to his grade so as best to gain aims desired.
General and special method.

4. The Position of Children in Reference to Work.

A. Meaning of "To teach children geography."
B. The preparation that may be expected in different grades.
C. Children's interest in work.
D. Pupils must be trained to work and think.
E. Goals are knowledge and power. Importance of rational repetition, of reviews and map work.

REFERENCE: Dodge, *Journal of Geography*, v, p. 385. *The Opportunity of the Geographer in Promoting School Geography.*

III. The Organization of a Course of Study

1. COURSE AS A WHOLE.
A. Must be capable of being judged as good by geographers.
B. Must lead to knowledge and power.
C. Must be arranged so as to lead from known to unknown along lines of least resistance but not least effort.
D. Method of approach of mature mind must not always be followed.
2. SOME FUNDAMENTAL CONSIDERATIONS.
A. No one course available for all localities.
B. Course should start with home geography.
C. Should lead next to elementary knowledge of world whole.
D. The emphasis to be given to continental work.
Division of work by grades.
E. Disadvantages of teaching all continents twice.
The following compromise is suggested as in general workable:
a. Twice: North America, United States, Europe, and perhaps portions of Asia.
b. Once: Asia, Africa, Australia, and South America.
Present importance of South America.
F. Plan of intermediate work should differ from plan of upper grades. "Concentric Circles."
G. The place of physical geography in the course of study:
a. Home geography: observational side.
Danger of overemphasis, of giving wrong outlook.
b. Intermediate grades: give setting to life side.
Larger facts only.
c. Upper grade: basis of work.
Not to be taught as a topic by itself but as a means to an end.
H. Emphasis of industries and commercial side.
I. "Following interests of children," — best meaning of phrase. Value and dangers.
Recent interest in industrial education places a renewed obligation on geography to be practical and to be free from fads.
Developing interest. Temporary and permanent interests.

REFERENCES: *Teachers College Record*, March, 1901, pp. 9–15. McMurry, C. A., *Special Method in Geography*, chap. ii. Redway, J. W., *New Basis of Geography*, chap. x. Bagley, W. C., *Function of Geography in Elementary Schools*, *Journal of Geography*, Vol. III, p. 222. Dodge, Richard E., "Some Suggestions Concerning a Course of Study in Geography," *Journal of Geography*, vii, pp. 7–14.

IV. Home Geography and World Whole

1. CERTAIN GENERAL CONSIDERATIONS.

A. Home geography not a subject or a division of geography, but a method of approach to field as a whole, — cannot have a uniform course for all places.

B. Method of procedure must be from known to unknown through analysis of experiences of pupils.

C. Work should not call for knowledge of distant places.

D. Lessons should become more intensive and scope more extensive.

E. Topics should be taken up in definite sequence so far as possible.

F. Definitions, if any, to be summaries at close of developed points and not points of departure.

G. Units developed to be good geography units which may be used as basis for comparison over world. Heat, storms, woods, for instance, are not good units. Crossroads or city corners good units.

H. Local history to be brought in as much as possible.
Should be intimately related to geography and may often be point of departure.

I. Importance of observation of local conditions.
Reasons for giving a certain place to processes of earth change.

2. TOPICS IN HOME GEOGRAPHY.

A. Social:

a. Simple life groups and relations.
(1) Home, village, city, etc. (2) Needs and means of communication. (3) Need for government. Form not to be included. (4) Reasons for trade. Simple illustrations. (5) Industrial features. (6) Universality of similar features over world.

B. Earth:

a. Forms of landscape as related to life.
b. Forms of drainage as related to life.
c. Soils and their use. Classification a minor matter.
d. Simpler atmospheric phenomena.
e. Direction and distance.
f. Maps.
g. Gravity.

3. TOPICS OFTEN INCLUDED.

A. Suitable to few localities: Volcanoes, mountains, ocean.

B. Not geographical:

a. Name and functions of officers of local government.

b. Building of a house or mechanical details of any trade.
c. Topics in geology such as formation of coal, marble, etc.
C. Beyond powers of pupils.
a. Form of earth, relation of bodies in solar system.
b. Rotation and revolution of earth.
c. Theory of storms.

4. Summaries:

A. Must be simple and easily drawn from previous work.

B. Must be of such a nature that they can be expanded as years go on without overturning base learned in earlier years.

C. Examples of good summaries:
a. Wind is air moving horizontally.
b. River is a stream of water and detritus flowing through the land.

D. Examples of bad summaries:
a. A lake is a body of water surrounded by land.
b. Mountains are high elevations of land.
c. A divide is the high land which separates two rivers.
d. A river is a stream of water which flows into the sea.
e. Hollow places in the land filled with water are called lakes.
f. A swamp is a tract of land soaked with water.

5. Some Simple Units of Home Geography to indicate Basis of Choice of Topics.

A. The home:
a. Simplest group of individuals which illustrates essentials of larger groups.
b. A unit of government: need of government in home and in any group.
c. Division of labor in home illustrates a world truth as to relations of individuals and groups.

B. Groups of homes.
a. Country four corners.
b. Village.
c. City.
d. Location of such cities as Vienna, Constantinople, Chicago.

C. Simpler surface features.
a. Why important, — travel over, seen as landscape.
b. Why emphasize landscape and not forms first?
c. Plains, — why most important? Life relation to.
d. Rolling lands. — Relations to life.
e. Mountain regions. — Relations to life (should, in many localities, be deferred to later work).

References: *Teachers College Record*, March, 1901, pp. 15–17. Davis, W. M., "Home Geography," *Journal of Geography*, p. 1. Geikie, A., *The Teaching of Geography*, chap. ii. McMurry, C. A., *Excursions and Lessons in Home Geography*.

6. First Knowledge of World Whole.

A. Expansion of home geography outward to ocean.
  a. How to present form of earth — relation to home, necessities and luxuries.
  b. Parts of earth that may be related to home in developing knowledge of world whole, based on experience of pupils.
    (1) Northern North America and Europe — furs. (2) Southern North America — bananas, woods, cacao. (3) Northern South America — India rubber, coffee, Brazil nuts. (4) Southern South America — hides, and meat products. (5) West Central Europe — embroideries, wine, cheese. (6) Southern Europe — olives, cork. (7) Southeastern Asia — tea, silks, spices, firecrackers. (8) Central Africa — ivory, palm oil. (9) Southern Africa — diamonds. (10) Southwestern Asia — rugs. (11) Australia — wool.

7. How to lead up to Climate of World.

A. Points to be brought out:
  a. Direction and distance in time.
  b. Similarity of purpose of life. Food, clothing, shelter.
  c. Different ways of doing things amid different conditions. Homes, dress, travel, kinds of food, natural food, weather conditions.
  d. Interrelation of peoples.

B. Points which may be neglected:
  a. Overmuch detail, *i.e.* Details of home life or occupations. Scenery.
  b. Curious and unimportant customs. Slanting eyes. Personal customs.

References: Farnham, A. W., "Oswego Geography Course," *Journal of Geography*, v, p. 109. *Teachers College Record*, March, 1901, pp. 17–20, 24–27.

V. The Point of View and Method of Approach in Intermediate Work

1. Purposes.

Knowledge of more important Continents and Countries, lives of people and reasons therefor.

A. Knowledge of facts of everyday life. Consequences to causes, — physical features in the large as points of departure for giving setting. Follow political divisions because of practical advantage.

B. Industrial interrelations of regions to be brought out.

C. Causal location and non-causal location. Picturesque side and how secured. Permanent location in visual image. Temporary location for clearness and practice. Memory work in location.

D. "Methods" of approach:
  a. "Concentric" — disadvantages.
  b. "Journey" — when valuable — disadvantages.
  c. "Type" method. What this means in a large way.
  d. "Map drawing" method.
  e. Value of reversing method in upper grammar grades.

E. The place of method.

a. Advantages and disadvantages of following a "method," centered about a personal point of view.

b. Value of subordinating "methods" to method.

REFERENCES: Bagley, W. C., "Geography in Intermediate Grades," *Journal of Geography*, iv, p. 299. *Teachers College Record*, March, 1901, pp. 29–35.

2. THE SO-CALLED TYPE METHOD.

A. What is a type? "A type is that individual of a species or genus which contains the largest number of features which are characteristic of the species or genus as a whole."

B. Types must be good geographic units, and not mere instances. The essentials of a good geographic unit.

C. A typical instance is not:

a. The most involved or striking example.

b. The most interesting example.

D. Why types cannot easily be selected in geography. Advantages and difficulties of using types.

a. Examples of good types.

E. Ways in which teaching by types is actually used in various texts and courses of study.

F. Teaching by "types" does not readily lead to the bringing out of political features; leads to overmuch detail and overemphasis of non-essentials.

REFERENCE: McMurry, C. A., *Special Method in Geography*, chap. ix.

VI. Industrial and Commercial Geography

1. PRESENT EMPHASIS OF INDUSTRIAL AND COMMERCIAL GEOGRAPHY.

A. Reasons for that emphasis: practical and educational.

B. Industrial geography deals with the geography underlying the principal human occupations: that is, the reason for the occurrence of industries in given localities.

C. Commercial geography deals with the elementary principles of trade and commerce, and includes a study of geography of great regions of production and demand, with causes. Emphasizes interrelation of commercial areas and reasons for same.

D. Industrial geography should be emphasized in intermediate years; commercial geography in the upper grades.

E. Industrial geography should include the study of groupings of peoples according to occupations and lead up to a knowledge of the simpler reasons therefor. These groups are agriculture, grazing, lumbering, mining, manufacturing, commerce, and "scenic centers."

F. Geography does not call for study of technique of industries, and should not include special study of details of industries. Futility of studying processes. Geographic side includes the reasons for industry and not the manner of it. Technique is largely result of human invention and is not geographic except pos-

sibly where some invention has revolutionized an industry and greatly changed relations of peoples to their geographic surroundings.

G. Geography underlying agriculture, grazing, and lumbering as examples of geographic influences.

H. Commercial geography should be based on knowledge of industrial and physical geography of earlier years, and should be a part of regional geography — not a special topic. It should include study of routes of trade, areas of supply and consumption of *chief* foods, textiles, manufactured products, raw materials, etc., and relative status of chief commercial nations, and reasons.

I. Difficulties in teaching commercial geography are due to modernness of subject, constant changes involved, lack of illustrative materials and to difficulties of securing proper materials for class study.

J. Some recent successes in teaching commercial and industrial geography. The development and purposes of commercial museums for schools.

REFERENCE: *Teachers College Record*, March, 1901, pp. 29–35.

VII. The Basis of Work in the Upper Grades

1. GEOGRAPHY IN UPPER GRADES SHOULD BE FOUNDED ON GOOD WORKING KNOWLEDGE OF ELEMENTARY PRINCIPLES OF GEOGRAPHY.

A. These principles should be elaborated summaries or generalizations of earlier work, and should be developed only so fully as is necessary for clearness and for future good work.

B. Physical geography not as an end, but as a means to an end.

C. Life consequences to be made prominent as illustrations at every step.

2. THIS WORK SHOULD INCLUDE:

A. Earth's shape — simple proofs and effects.

B. Earth's motions — results.

C. Elements of climate and weather as related to earth's motions with effects. Importance of climate.

D. Simpler land forms and influence on life. Drainage.

E. Simpler features of oceans and oceanic movements as related to commerce and trade. Tides need not be elaborated

F. Distribution of plants as related to causes, especially climate.

G. Distribution of animals as related to causes. This topic should be treated briefly.

H. Races of men and their distribution as related to climate and food supply.

I. Elements of commerce causally developed.

J. Elements of political geography — including meaning of nation, of boundary, origin of boundaries, exchange of consuls, ministers, etc.

3. TOPICS WHICH MAY BE OMITTED:

A. Causes of tides.

B. Condition of interior of earth.
C. Causes of mountain growth.
D. Details of glaciation.
E. Geological development of continent.

4. Method in Large.

A. Work should be developed, as far as possible, as result of map work and personal observations.

B. Principles should be illustrated as widely as possible to show general importance.

C. Some topics may readily be studied in association with study of Africa or Australia, and thus training may be given in working from causes to consequences, as preliminary to later use of definite causal order.

Reference: Redway, *New Basis of Geography*, chap. viii.

VIII. The Topical Method in Upper Grades

1. General Agreement in Reference to Teaching Continents in Upper Grades from Causes to Consequences.

A. Principles should be used as basis of work.

B. Work should be largely based on map study, especially maps of climate, physical features, distribution of trade routes, peoples, industries, etc.

C. Work should not be too stereotyped, — that is, order of procedure should not always be the same.

D. Training should be given in reasoning and in use of reference books, texts, atlases, etc.

E. Topical method means to work from larger, simple, general features, out to more detailed, special and complex conditions. Possible modifications and advantages. Using an imaginary continent.

2. An Example of Topical Order: The Larger Features of North America.

A. Location:
- *a*. By latitude and longitude.
- *b*. In reference to ocean.
- *c*. In reference to other continents.
- *d*. In reference to wind systems.

B. Larger surface features:
- *a*. Cordilleran Highland.
- *b*. Appalachian Highland.
- *c*. Atlantic Coastal Plain.
- *d*. Great Central Plain.
- *e*. Height of Land.
- *f*. Influence and extent of glaciation.
- *g*. Consequent lines of drainage:

(1) Arctic drainage. (2) Pacific drainage. (3) Atlantic drainage. (*i*) Direct. (*ii*) By St. Lawrence. (*iii*) By Gulf of Mexico.

C. Coast line:
  a. Compare east and west coast as to:
    (1) General form. (2) Number of harbors. (3) Availability of harbors. (4) Nearness to foreign ports.

D. Climate:
  a. Position in reference to wind systems.
  b. Summer and winter distribution and range of temperatures.
  c. Relation to ocean and ocean currents.
  d. Chief modifications due to surface.
  e. Three climatic divisions: east coastal, west coastal, and interior.
  f. Rainfall in each as related to agriculture.
  g. The growing season conditions in each.

E. Vegetation:
  a. Chief vegetation regions as related to climate and surface.
  b. Distribution and characteristic features of tundra, forests, steppes, and deserts.
  c. Significance of vegetation distribution.

F. Animals: Briefly as related to climate and vegetation.
  a. Domestic.
  b. Wild.

G. Mineral products: As related to surface.

H. People: Distribution of people as related to surface, climate, drainage, coast line, and products. (Follow this by summary of United States as related to North America, and then by New England, following order given and extending to occupations and commerce. Bring out location of leading cities causally.)

I. Summarize continents by comparative study of reasons for commercial development of principal nations and of distribution of great world products.

References: Farnham, A. W., "Oswego Geography Course," *Journal of Geography*, v, p. 211. Hotchkiss, C. W., *Journal of School Geography*, ii, p. 41. Reudiger, W. C., "Suggestions for Geography Teaching in Upper Grades," *Journal of Geography*, iv, p. 433.

IX. The Use of Maps and Textbooks

1. Advantages of a Text:

A. Outlines a course of study when none better is available.

B. Gives clear definitions and summaries.

C. Gives second exposition of subject matter of value to pupils who gain best impression through the eyes.

D. Shows relative values of different parts of subject.

E. Furnishes text, maps, and illustrations for study.

F. Gives chance for training in how to study.

G. Gives means of holding children responsible for certain work.

2. How to use Text:

A. Text should be servant of teacher, and not the teacher a slave of text.

B. Text used *before* recitation in association with outline or series of map questions where nature of materials or other conditions do not permit development. Advantages of assigning lessons in certain grades.

C. Text used *in* recitation to give training in how to study in intermediate grades.

D. Text used *after* recitation as means of summary and review in much of home geography and in certain parts of upper grade work. Teachers here use materials of book as "texts" or points of departure.

3. The Use of Maps.

A. Maps fundamental in geography.

B. Maps only clear and accurate means of representing certain classes of facts. Examples of such facts.

C. Essential points to be kept in mind in map use.

- *a*. Cardinal directions indicated by meridians and parallels.
- *b*. Top of map is not necessarily north.
- *c*. Scale is necessary for getting ideas of distance and area.
- *d*. Each map has special symbols adapted to special purpose of map.
- *e*. First maps studied should be maps of local region shown in a horizontal position and properly oriented.

D. Maps of most service in texts and classroom:

- *a*. Political maps in all grades.
- *b*. Physical maps of large areas only give relative conditions. Cannot give exact representation of country. Dangers in physical and relief maps.
- *c*. Climatic maps: annual, seasonal, special. Winds and heat belts.
- *d*. Vegetation maps in upper grades.
- *e*. Product and commercial maps as related to vegetation, climate, and surface.

References: Redway, J. W., *New Basis of Geography*, chap. ix. Calkins, R. C., "The Text, the Course of Study and the Teacher," *Journal of Geography*, iv, p. 164. Brown, Robert M., "Map Reading," *Journal of Geography*, iv, pp. 273–288.

X. The Relation of Geography to Other Subjects in Curriculum

1. Place of Geography.

A. Geography is considered by some as fundamental subject in curriculum, as it gives basis for study of human activities.

B. Geography is rather an important subject to be studied in connection with other subjects so as to produce best results from curriculum as a whole.

C. Coöperation between subjects does not mean parallelism in teaching or disorganization on one subject because of temporary possible cross relations to other subjects.

D. Unity of course of study as whole in any subject of more value than temporary mutual relations between subjects.

E. Geography closely related, in many ways, to nature study, history, language, and arithmetic.

F. Geography may contribute to and receive help from industrial subjects.

2. Geography and Nature Study.

A. Simpler elements of geography should be included sanely in nature study of Grades I, II, and III.

B. Geography in Grade III and perhaps IV should be based on nature study of earlier years. Simpler aspects of home geography should be taught before Grade III.

C. Geography contributes to nature study knowledge of conditions influencing distribution of plants and animals, elements of weather, soils, slopes, drainage, simple land forms, distance, and other conditions affecting problems of food, clothing, and shelter.

D. Geography gives application to nature study in upper grades, summarizes distribution of animals and plants, and gives regional basis to nature study.

E. Nature study contributes to geography knowledge of plants and animals and their ecological relations, physics and chemistry of soils, water, etc., as related to agriculture, grazing, and lumbering.

F. Topics of doubtful value in nature study or elementary geography.

a. Formation of coal, marble, and rocks, and similar topics.

b. Minerals, except in localities where minerals may be found.

c. Earth's motions and similar large topics which cannot be studied through observation.

3. Geography in its Relation to History.

A. Geography finds its best applications in history.

B. Geographic influences *vs.* geographic controls in history.

C. Geography deals with the relation between physical environment and life in all its phases. History deals with the interpretation of human movements.

D. Hence history finds its basis largely in geography both in reference to large facts and smaller details. Examples.

E. Suggested order of studying geography and history in the different grades. History should aid in making political geography understandable.

4. Geography in its Relation to Arithmetic.

A. Problems in area, distance, time, averages, proportion, etc., may well be developed through use of facts of geography.

B. Graphic method of representing comparisons in geography should be developed in arithmetic.

C. Latitude and longitude to be developed in geography and applied in arithmetic.

5. Geography in its Relation to Language.

A. Geography finds much of its material in literature and its largest means of expression in language.

B. Geography should give landscape setting to poetry and prose.

C. The study of literature should include material which is geographically sound.

D. Much geography is not expressed in good literary form, and much literature is geographically unsound.

REFERENCES: McMurry, C. A., *Special Method in Geography*, chap. viii. Allen, L. R., "Correlation of Geography and History," *Journal of Geography*, ii, p. 404. Woodice, Florence A., and Brown, Robert M., "An Experiment with Geography and History with a Sixth Grade," *Journal of Geography*, vii, pp. 1–7.

XI. Geography and Expression Work

1. EXPRESSION.

A. Chief and most important forms of expression are oral and written expression.

B. Danger and unfairness of considering expression work to be merely handwork.

2. CHIEF WAYS IN WHICH HANDWORK CAN BE USED IN GEOGRAPHY.

Through map drawing, map filling, sand or chalk modeling, and freehand drawing.

A. Modeling:
- *a.* A means to an end of value if done skillfully and easily.
- *b.* Dangers in representing scale and slopes.
- *c.* Should involve small area as to details or merely general features of a large area. First work in modeling should be devoted to features that children may observe as wholes.

B. Map Drawing:
- *a.* Too time-consuming as a rule.
- *b.* Difficulties of projection and scale.
- *c.* Over-refined product should not be called for.
- *d.* Children's maps are a bad basis for visualization.

C. Map Filling:
- *a.* Makes use of best base map available and same base map for all.
- *b.* Excellent means of review as test of knowledge gained.
- *c.* Relative value of flat and relief outline maps.

D. Freehand Drawing:
- *a.* An accessory to geography work, not a way of making confused objects or relations clear.
- *b.* Value of slope sketching, of simple landscape work, and of map coloring.
- *c.* Hand work may borrow ideas and details from geography but adds little to value of geography as a subject.

XII. Equipment in Geography Teaching

1. Necessity of Equipment.
   Maps, globes, and illustrations. Costly single pieces of apparatus to be avoided.

A. Maps:
   a. Every schoolroom should contain the following wall maps:
      (1) Mercator map of world. (2) Map of North America or United States. (3) Map of continents to be studied.
   b. Maps should be chosen for demonstration and recitation work and not for study.
   c. Hence should be clear, capable of being seen across the room, not overcrowded with details: rivers and cities not overemphasized.
   d. Upper grades should have physical map of United States and Europe for use in history and geography.
   e. The use of United States Geological Survey Topographic Maps.
   f. Use and means of securing weather maps.
   g. Blackboard outline maps, — value and use.
   h. Difficulties of securing certain much desired wall maps.

B. Globes:
   a. One 10 or 12 inch political globe available in every room.
   b. Globe to be of a size to be easily handled.
   c. Political globe should be up-to-date; not overcrowded.
   d. Blackboard globes, — how used.
   e. Small physical or political globes for individual use.
   f. The use of relief globes.

C. Apparatus:
   a. Avoid large pieces and geographical diagrams.
   b. Standard thermometer, barometer, compass, and wind vane to be available.
   c. Special pieces available for special purposes.

D. Illustrations:
   a. Includes photographs, cuts from magazines, slides, stereoscopic views.
   b. Necessity of scheme for selection, classification, and storage of materials.
   c. Value of a few good illustrations as compared with a host of poor illustrations.
   d. Relative advantages of pictures, slides and stereoscope for special purposes.
   e. Mechanical difficulties incident to class use of illustrations.

References: Redway, J. W., *New Basis of Geography*, chap. xi. "Equipment for Geography Teaching," *Journal of Geography*, v, pp. 242–250. Whitbeck, R. H., "Practical Work in School Geography," *Journal of Geography*, iii, pp. 374–379. Emerson, P., "Field Work in the Class-Room," *Journal of Geography*, i, pp. 54–57, 81–98.

XIII. The Geographic Preparation of a Teacher of Geography

It is neither possible nor desirable to have every grade school teacher a specialist in geography.

A. The scope of work analyzed.

a. Larger portion of work will be the geography of continents in earlier or later grades.

b. Small portion of work will be development of principles of physical and life geography.

c. The principles will be expected to be used in continental work.

B. The requisite training of a teacher must then include:

a. Some study of larger principles so as to make these principles usable in all grades.

b. Special study of one or more continents so as to give point of view and method of studying a region causally.

c. Training in use of maps, especially atlas and text maps, weather maps and United States Geological Survey Topographic Maps.

d. Knowledge of larger principles underlying geography teaching in the grades and study of special difficulties in each phase of elementary school work. Knowledge of subject matter is an essential basis for study of methods of teaching.

e. These requisites suggest the necessary content and order of procedure in geography courses in training classes.

C. Desirable training that teachers should be encouraged to secure.

a. Knowledge of geography beyond the minimum outlined above and sufficient to make them independent workers and possibly investigators in some phase of geography.

b. Good knowledge of history of United States and Europe.

c. Knowledge of elements of anthropology, economics, and biology, particularly along ecological lines.

d. Knowledge of modern industrial problems in the United States, particularly along lines of agriculture, manufacturing, commerce, and conservation of forests and water supply.

D. Opportunities for securing training in geography.

a. Larger and better normal schools and many colleges and universities now include well planned courses in geography.

b. Teachers in service will find splendid opportunities for geography work at the summer schools of colleges and normal schools. Also in some cases in certain phases of the subject, work may be secured in extension and correspondence courses.

c. Teachers seeking summer school opportunities should go to institutions that have summer terms, and not, as a rule, merely to summer institutions. Geography cannot be adequately taught without equipment, and only those institutions which are in operation the year round can have adequate equipment.

SELECTED REFERENCE LIST FOR TEACHERS

General: —

Longman's Gazetteer. Longmans. The authoritative pronouncing and spelling gazetteer of the world. Contains excellent brief descriptions of all important places.

Lippincott's Gazetteer. A recent authoritative volume containing excellent brief descriptions of all places of any importance.

Andree's Hand Atlas. Velhagen and Klasing, Leipsig. Recent reference atlas containing excellent climatic maps and maps showing distribution of peoples, religions, plants, animals, etc.

Stieler's Hand Atlas. Perthes, Gotha. The leading reference atlas.

Mill, *International Geography.* Appleton. The best single volume reference book on general and regional geography.

Stanford's Compendia (reissue). Stanford. The leading reference books on the several continents. Two volumes each on Asia, Australia, North America, Central and South America, Africa and Europe.

Regional Geography. Appleton. Accurate, readable, helpful volumes of first importance. Includes volumes on Britain and the British Seas, Central Europe, India, The Nearer East, and North America.

Herbertson, *Senior Geography.* A very useful volume summarizing geography of several continents in a causal order. Especially helpful for Europe.

Mill, *Hints to Teachers and Students on the Choice of Geographical Books for Reference and Reading.* Longmans. A very helpful reference list with brief comments on the individual references. Gives general and special references. A new edition appeared early in 1909.

The Teaching of Geography: —

Geikie, *The Teaching of Geography.* Macmillan. A very suggestive book on the essentials of good geography teaching.

McMurry, C. A., *Special Method in Geography.* Macmillan. Discusses the scope of geography and outlines a course emphasizing the teaching by types.

Redway, *New Basis of Geography.* Macmillan. Interesting and helpful for teachers in upper grades who need to teach continents from the practical standpoint.

Physical Geography: —

Mill, *Realm of Nature.* Scribners. A very valuable and simple book on physical and mathematical geography and on biogeography.

Davis, *Physical Geography.* Ginn & Co. An authoritative secondary school text, particularly helpful in reference to the land features.

Davis, *Elementary Meteorology.* Ginn & Co. The leading English book on weather and climate.

Ward, *Practical Exercises in Elementary Meteorology.* Ginn & Co. Very helpful to teachers who have to deal with weather phenomena.

Gilbert and Brigham, *Introduction to Physical Geography.* Appleton. An interesting, authoritative, and well illustrated secondary text on physical geography.

Tarr, *New Physical Geography.* The Macmillan Company. One of the newest and best high school books.

Salisbury, *Physiography.* Henry Holt & Company. Most inclusive and best illustrated volume available. An indispensable library reference volume.

Harrington, Mark W., *About the Weather.* Appleton. Very helpful for teachers in elementary grades.

Dodge, *Reader in Physical Geography for Beginners.* Longmans. Small volume on physical geography, available as an introduction to the subject.

Biogeography: —

Ratzel, *History of Mankind* (3 vols.). Macmillan. A very comprehensive book on the races of mankind, the first volume being particularly valuable for its consideration of the problems of race distribution.

Wallace, *Island Life.* Macmillan. Classic book on animal distribution from geographic standpoint.

Guyot, *Earth and Man.* Scribners. One of the older books, and hence not written from a modern standpoint: but still invaluable for presenting the relation of earth features to life.

Herbertson, *Man and His Work.* A. and C. Black. A very usable and interesting small volume, showing the manner of life of people living in different vegetation regions and amid different surface conditions.

Lyddeker, Hutchinson and Gregory, *Living Races of Mankind.* Hutchinson & Co. Two splendidly illustrated volumes on the races of men, simple, and popularly written.

Commercial Geography: —

Adams, *Commercial Geography.* Appleton. An accurate, well ordered, and almost indispensable book on commercial geography. Maps and diagrams are very numerous and helpful for the teacher.

Chisholm, *Commercial Geography.* Longmans. The most inclusive volume in the English language. Contains excellent abstracts of general geography of each country in a good causal order.

Periodicals: —

Journal of Geography. Published by Teachers College, New York City. Only journal in the country devoted to teaching of geography.

Geographical Teacher. Phillips, London. Similar in scope to above journal and contains much of value to American teachers.

National Geographic Magazine. Washington, D. C. Leading popular journal of geography in country.

Geographical Journal. London. Leading strictly geographical journal in English-speaking world.

IV. THE TEACHING OF HISTORY

By Henry Johnson, A.M.

I. What History is

1. The Word "History" may denote:
a. Past facts themselves.
b. Traces left by past facts.
c. The study which investigates such traces.
d. The knowledge thus obtained.
e. An account or narrative in which such knowledge is embodied.
2. The Sources of Historical Knowledge.
a. Primary sources.
1. Material remains — roads, buildings, tools, weapons, clothing, any material object shaped by man or associated with his life on the earth.
2. Reports of conditions and events made by actual observers. Such reports may be oral, written or printed, pictorial.
b. Secondary sources — reports or accounts based upon primary sources.
c. Accounts based upon other accounts in varying degrees of removal even from secondary sources.
d. Existing sources relate to fragments only of man's total experience in the world.
3. Historical Criticism — the Foundation for the Determination of Particular Facts relating to the Past.
a. External criticism — investigation of the origin and transmission of sources; a study of form, language, writing. Is the material remaining authentic? Who was the author of the document? What did he say?
b. Internal criticism — investigation of the content of sources. What did the author mean? Are his statements true?
c. The need of historical criticism finds daily illustration in the schoolroom, in ordinary conversation, in the newspapers.
d. Historical criticism first formally applied by the Greeks. Not fully developed until modern times.
4. Historical Synthesis — putting the Facts together into a Body of Organized Knowledge.
a. The chronological order — facts arranged according to time of occurrence.
b. The geographical order — facts arranged according to place of occurrence.
c. The logical order — facts arranged according to their intrinsic nature.
d. One order used exclusively.
5. History as an Account or Narrative.
a. The subject embraced.
1. A single person.
2. A single people — whole known period or a part of it.

3. The whole world — universal history.

b. General conceptions of history writing.

1. A narrative of memorable events. Aim, mainly to please. Content determined by taste of authors and their public. Epic poets and story-tellers early contributors. Classical type fixed by Herodotus, the "father of history."
2. A collection of precedents supposed to be useful to statesmen, generals, and others. Aim, didactic. Content determined by the kind of examples or lessons needed. But these, according to early conceptions, to be valuable must be true to the facts. Facts largely political and military. A conception introduced by Thucydides and developed by Polybius.
3. Scientific history. Aim, to exhibit the past as it was and to explain how it came to be what it was. Content determined by what is regarded as significant in illustrating the idea of development in human affairs.

c. These general conceptions correspond roughly to stages of human culture.

d. History generally regarded merely as a branch of literature up to 1850.

e. Side by side with scientific histories, works of the older types are still being produced.

REFERENCES: Langlois and Seignobos, *Introduction to the Study of History*, pp. 63–70, 211–231, 296–321. Bernheim, *Einleitung in die Geschichtswissenschaft*, pp. 5–13, 33–43, 72–78. Fling, *Outline of Historical Method*, pp. 5–124. Robinson, *History*, Columbia University Press, 1908. Rhodes, in *Atlantic Monthly*, Vol. LXXXV, pp. 158–169. Winsor, in *Atlantic Monthly*, Vol. LXVI, pp. 289–297.

II. The Problem of Adapting History to Children

1. SPECIAL GUIDANCE SOUGHT IN THE "NATURAL" TASTES AND INTERESTS OF CHILDREN.

a. These determined by experiment.

b. Sometimes regarded as a final criterion.

c. Reinforced by the culture epoch theory.

d. Conclusion: "The childhood of history for the child, the boyhood of history for the boy, the youthhood of history for the youth, the manhood of history for the man."

e. The conclusion interpreted.

1. Facts to be selected and arranged according to their cultural stages and not according to time or place of occurrence.
2. Manner of treatment to accord in general with the conception of history first developed by the race.
3. Scientific history thus excluded.

f. General comment: Important to distinguish between the natural tastes and interests of children and the cultivated intelligence of children.

2. Approach from the Side of History.

a. Kinds of historical facts.

1. Facts relating to physical appearance of men and their material environment.
   - *a.* Possibility of direct appeal to the senses.
   - *b.* The simplest illustration of change in the world.
   - *c.* Material aspects of the past sufficiently unlike those of the present to be interesting.
2. Facts relating to what men did.
   - *a.* Direct sense appeal not applicable.
   - *b.* Only actions now in progress can be observed.
   - *c.* With these as a basis actions in progress in the past more or less readily imaged.
   - *d.* That action appeals to children an axiom of history teaching.
3. Facts relating to thoughts and feelings of men, the motives that moved them to do or to say.
   - *a.* Known only through deeds and words.
   - *b.* Real understanding of the past measured by pupil's ability to enter this inner life of history.
   - *c.* Important to recognize difficulties and limitations.
   - *d.* The mental states of a Clovis, a Charlemagne, a Napoleon, or even of a cave-man, an Indian, a pioneer, largely beyond the experience of children and of most adults.
4. In each of these groups the simplest facts relate to particular objects, particular acts, thoughts, feelings.
5. Collective facts, facts relating to social groups, to institutions, to general causes that act in history, much more difficult.
   - *a.* How represent a wave of prosperity? a panic? a revolution? society itself?
   - *b.* Such expressions made intelligible by resolving them, so far as possible, into their concrete elements.

b. The kinds of facts enumerated common to literary, didactic, and scientific history.

c. Degree of difficulty presented by a given type of facts not essentially different for different kinds of history.

d. A principle of grading thus suggested as applicable to one kind of history as to another.

1. Any facts readily visualized possible material for school history.
2. Clear visualization a factor in stimulating interest.
3. Clear visualization of the man, the act, the situation, a necessary key to his mental states.
4. Elementary history, therefore, to be largely descriptive and narrative, to be made up of concrete examples rather than generalized knowledge.

e. Time and place relations essential to the conception of any fact as historical. As difficult for one kind of history as for another.

f. Special conditions imposed by scientific history.

1. Facts in palpable conflict with present knowledge not to be regarded as historical.
2. Facts to be characteristic of persons, peoples, places, periods; not exceptional, abnormal, bizarre.
3. Facts to be so presented as to exhibit relations, cause and effect, continuity.
4. Facts to be so presented as to arouse some consciousness of how we know what we know about the past and why we do not know more.
5. These conditions quite possible to meet within the limits suggested by the principle of grading already set forth.

REFERENCES: *Teachers College Record*, November, 1908, pp. 1–25. Bernheim, in *Neue Bahnen*, Vol. X, pp. 265–300, 337–357. Seignobos, *L'Histoire dans l'Enseignement secondaire*, pp. 3–25. Muzzy, in *Association of History Teachers of the Middle States and Maryland*, 1906, pp. 13–28, especially 17–19. Channing, in *North Central History Teachers' Association*, 1907, pp. 14–18. Laurie, in *School Review*, Vol. IV, pp. 655–660. Salmon, in *Year Book Society for Scientific Study of Education*, 1902, pp. 47–54; McMurry, in same, 1903, pp. 47–51. *American Historical Association*, 1905, pp. 135–145. Hinsdale, *How to Study and Teach History*, pp. 42–52, 67–74. Rice, *in Educational Review*, Vol. XII, pp. 169–179; Burnham, in same, Vol. XXVII, pp. 521–528. Peabody, in *National Education Association*, 1893, pp. 284–285. Barnes, *Studies in Historical Method*, pp. 57–105. Mace, *Method in History*, pp. 255–308. Suzzallo, in *Teachers College Record*, May, 1904, pp. 11–19; Marker, in same, pp. 20–33.

III. The Question of Aims and Values

1. THE FAITH OF EDUCATORS IN THE UTILITY OF HISTORY ATTESTED BY PROGRAMS IN THE SUBJECT FOR EVERY GRADE OF INSTRUCTION FROM THE KINDERGARTEN TO THE UNIVERSITY.

2. CURRENT DISCUSSIONS CONFUSING.

a. Aims sometimes defined without reference to the nature of history. History then repudiated wherever it happens to interfere with "the uses of history."

b. Aims sometimes inconsistent with each other.

c. Little to indicate that one of the aims of historical instruction is to teach history.

3. AIMS COMMONLY PROPOSED.

a. Discipline — training of the memory, the imagination, the judgment.

b. Culture — "enriching the humanity of the pupil."

c. Inspiration — furnishing ideals of conduct, patriotism, social service.

d. Practical knowledge — teaching pupils how to act in the present.

e. The illumination of other studies, especially literature and geography.

f. The cultivation of a taste for historical reading.

g. The explanation of the present — nothing in the world to-day really intelligible apart from its history.

4. Special Modern Emphasis upon the Social Value of History.

a. An application of a general point of view in education.

b. Special demands upon history.

1. Must show in the form of concrete examples what society is and how it works.
2. Must "give a vivid and intense realization of social duties and obligations."

5. Pertinent Questions.

a. Are the aims proposed in fact promoted by a given kind of instruction?

b. Are they promoted as effectively as they might be by some other kind of instruction?

c. Are they the most useful of the possible ends that history might serve?

6. Observations and Experiment needed to furnish Data for Answers.

References: McMurry, *Special Method in History*, pp. 1–17. Kemp, *Outline of Method in History*, pp. 104–113. Barnes, *Studies in Historical Method*, pp. 106–121. Lloyd, in Spencer, *Aims and Practice of Teaching*, pp. 141–148. Rice, *History and Literature*, pp. 3–26, 149–166. Woodward, in *Essays on Teaching of History* by Maitland and others, pp. 69–78. Hinsdale, *How to Study and Teach History*, pp. 2–17. Bourne, *Teaching of History and Civics*, pp. 77–92. *Year Book, Herbart Society*, 1898, pp. 25–56. Snedden, in *Journal of Pedagogy*, Vol. XIX, pp. 259–268. *Proceedings, National Education Association*, 1892, pp. 348–352; 1894, pp. 397–412; 1895, pp. 139–142, 306–308; 1896, pp. 410–413. *Report, Committee of Seven*, pp. 158–162. Kirk, in *Education*, Vol. XVI, pp. 15–18; Crawford, in same, Vol. XXII, pp. 281–286; McMahon, in same, Vol. XXIII, pp. 109–114. Langlois and Seignobos, *Introduction to the Study of History*, p. 331. Lea, in *American Historical Review*, Vol. IX, pp. 233–246. Harrison, *Meaning of History*, pp. 1–23. *Teachers College Record*, November, 1909, pp. 55–56.

IV. The History Program for the Elementary School

1. The Preparatory Period — The First Three or Four Years.

a. Myths, fairy tales, fables, Oriental, Greek, Roman, later European. Some use of American folk lore.

b. Simple biographies from American or world history. May or may not be arranged chronologically.

c. Stories connected with anniversaries, birthdays, Thanksgiving, Christmas.

d. Stories from the Bible.

e. Stories of primitive life.

f. Stories of inventions.

g. Stories from local history.

h. Various studies of a geographical or sociological character.

i. Several or all of these types of material may be represented in a single program.

j. Some schools carry this kind of work into higher grades.

2. The Intermediate Stage — Fifth and Sixth Years.

a. Beginnings of textbook instruction.

b. More attention to chronological order and geological setting.

c. Subject: ancient history, the Middle Ages, English history, American history. Chief emphasis on American history.

d. Material usually biographical.

e. Some schools begin this stage of work in the fourth year.

3. The Last Two Years.

a. Subject usually the United States.

b. The subject often divided.

1. Colonial period for the seventh year.

2. Later period for the eighth year.

c. Some schools have English history in the seventh year.

d. Civics frequently combined with history, especially in the eighth year.

e. Occasionally some Greek and Roman or general European history in one or both of these years.

4. The Program proposed by the Committee of Eight.

First grade: Indian life. Explanation of holidays.

Second grade: Indian life. Holidays. Local history.

Third grade: Heroes of other times. Holidays.

Fourth grade: Historical scenes and persons in American history, colonial period.

Fifth grade: Historical scenes and persons in American history continued. Great industries of the present.

Sixth grade: European background of American history.

Seventh grade: American history to the Revolution. European background continued.

Eighth grade: The United States since the Revolution. Great events in European history.

References: Bourne, *Teaching of History and Civics*, pp. 72–74, 106–114, 353–365. Reports of Committees: *Committee of Ten*, pp. 163, 177–181; *of Fifteen*, pp. 62–67; *of Twelve*, pp. 171, 174–175; *of Seven*, pp. 162–172; *of Eight*, pp. 1–91; Salmon, in *Year Book*, *Society for Scientific Study of Education*, 1902, pp. 31–60. McMurry, *Special Method in History*, pp. 18–33, 238–268. Kemp, *Outline of Method in History*, pp. 133–263. *Elementary School Record*, Vol. I, No. 8, pp. 199–216. Rice, *History and Literature*, pp. 27–74. Magnusson, in *New York Teachers Monographs*, March, 1903, pp. 90–97. Greene, *History in the Kindergarten*. Warfield, in *Education*, Vol. XIV, pp. 1–5. Gordy and Twitchell, *Pathfinder in American History*, Part I, pp. 43–50; Part II, pp. 5–20. *Proceedings*, *National Education Association*, 1892, pp. 310–316; 1905, pp. 304–308, 360–370; 1897, pp. 58–67. Payne, *Elementary School Curricula*, pp. 22, 24–39, 50.

V. General Methods of Instruction

1. The Preparatory Period — the First Three or Four Years.

a. Presentation of material usually oral.

1. Reading the story.
2. Telling the story.
3. Developing the story by questions.
4. Pointing the moral.

b. The children's part in the lesson.

1. Telling the story.
2. Writing the story.
3. Solving problems suggested by the story.

c. Stories of the preparatory period may be so managed as to form a real basis for later history — training in putting things together, in seeing simple relations, in developing a sense of continuity.

2. The Intermediate Stage — the Fifth and Sixth Years.

a. Some oral presentation along the lines indicated for the preparatory period.

b. The general tendency toward textbook work.

1. Regular lessons assigned and recited.
2. The lesson read with the class during the history period.

c. Character of the textbooks.

1. Rarely the work of historical experts.
2. Aim to tell a story rather than history.
3. Accuracy a minor consideration.
4. Show little sense of historical proportion.
5. Their merit is that children can understand them.
6. Some recent books conceived in a more serious spirit and much better as history.

d. The use of maps, pictures, and other special aids to visualization increasing. Still much to be desired.

3. The Last Two Years.

a. Textbook work becomes more formal.

b. Types of textbook recitations.

1. "Hearing" the lesson.
   a. Teacher announces the heading of paragraph or opening words of sentence.
   b. Pupil carries the story forward until relieved by "next."
   c. A test of memory.
2. The question and answer method.
   a. Teachers' questions suggest analysis of text.
   b. Short answers by pupil.
   c. Memory test prominent.
3. A good general plan.
   a. Teacher announces topic.
   b. Pupil tells what he knows about it.
   c. Corrections, additions, and questions by other members of class.
   d. Corrections and additions by teacher.
   e. Questions by teacher designed to apply what has been learned.
      1. Comparison with other topics previously studied.
      2. Comparison with conditions in the present.

c. The use of two or more textbooks.

1. The pupil prepares his lesson from two or more different books.
2. Different pupils have different books.
3. Aim to bring out difference in point of view or in statement of facts with a view to making pupils think.

d. Outside reading.
1. Other textbooks.
2. Poems and novels.
3. Some references to standard histories and to simpler primary sources.

e. Notebooks.
1. Making and keeping outlines.
2. Reports of outside reading.
3. Reports of class discussions.

f. The use of maps, pictures, and other special aids increasing.

g. Character of the textbooks.
1. A number of recent books written by competent students of history.
2. Reasonably good as history.
3. Inferior to more elementary books as apparatus for teaching.
4. Responsibility for the "whole story" tends to reduce textbooks to outlines and tempts to generalizations which are largely meaningless to children.
5. The class recitation thus in danger of becoming an exercise in mere words.

REFERENCES: Bryant, *How to Tell Stories to Children*, pp. 13–21, 83–109. McMurry, *Special Method in History*, pp. 50–85. Hinsdale, *How to Study and Teach History*, pp. 53–66. Bourne, *Teaching of History and Civics*, pp. 148–168. Gordy and Twitchell, *Pathfinder in American History*. Foltz, *zur Methode des Geschichtsunterrichts*, pp. 174–216. *Teachers College Record*, November, 1908, pp. 26–32.

VI. The Biographical Approach to History

1 WHAT THE BIOGRAPHICAL METHOD IS.

a. The study of individual men and women as individuals.

b. The study of individual men and women as representatives of movements, periods, social groups.

c. The persons selected for study usually great or famous.

2. REASONS FOR PREVALENCE OF THE METHOD.

a. Offers units that are simple, concrete, interesting.

b. Satisfies ethical demands made upon historical instruction.

c. German experience a potent example.

d. Supported by "great man theory" of history.
1. "The history of what man has accomplished in this world is at bottom the history of the great men who have worked here." — CARLYLE.
2. "Great men sum up and represent humanity." — RENAN.

3. THE KINDS OF PERSONS THAT INTEREST CHILDREN.

a. Men of primitive instincts — cave-men, Indians.

b. Men who "did things" — especially brigands, pirates, adventurers, generals, kings.

c. These types fully exploited in books for children. Possibly cause as well as effect of children's tastes.

d. Relatively few tests of children's attitude toward scholars, writers, artists.

4. General Criticism.

a. Personal element essential to school history.

b. Events can to some extent be grouped about individuals.

c. But "great man theory" not well applied.

1. Persons selected for study often not representative. May be exceptional. Often at best merely picturesque.
2. Historical characters often distorted for moral ends.
3. Doubtful anecdotes used to excess.

d. The "great man theory" not generally accepted by historians.

e. Individuals often more easily grouped about events than events about individuals.

f. The general tendency of the biographical method is to leave a series of disconnected impressions.

References: Kemp, *Outline of Method in History*, pp. 264–295. Hinsdale, *How to Study and Teach History*, pp. 30–31, 44–45. Bourne, *Teaching of History and Civics*, pp. 18–20, 86, 356. Mace, *Method in History*, pp. 289–294. Lawless, in *Nineteenth Century*, Vol. L, pp. 790–798. Bernheim, in *Neue Bahnen*, Vol. X, pp. 338–342.

VII. The Social and Economic Point of View

1. Great Men not excluded, but the "Masses" included.

2. Emphasis upon Social and Economic Conditions, —

Occupations, industries, inventions, commerce, manners and customs, education, amusements, food, dress, upon whatever serves to illustrate the common life.

3. The Point of Departure.

a. The daily life and material environment of the community in which the school is situated.

b. The development of some special invention, trade, art, industry, related to the immediate neighborhood.

c. The constructive activities of children — sewing, weaving, cooking, making furniture.

d. Local history.

4. Application to History in General.

a. Limited by the nature of the material available.

b. Difficult to arrange a connected narrative.

c. German experience — Biedermann's *Kulturbilder*. The conditions of German life at selected stages described, compared, and contrasted.

5. A Growing Recognition of the General Point of View.

a. Influence of democratic ideals.

b. Industrial education an important factor in securing change of emphasis.

c. An enlarged view of history.
1. Carlyle's protest against the older historians.
2. Macaulay's theory of history.
3. The work of John Richard Green.
4. McMaster's *People of the United States*.

d. The economic interpretation of history.

e. Material supplied by *Documentary History of American Industrial Society*, 10 volumes, to be published, 1909–1910.

REFERENCES: Dopp, *Place of Industries in Education*, pp. 97–260. Rice, in *Year Book, Society for Scientific Study of Education*, 1903, pp. 9–14. Wood, *Report on Teaching History*, pp. 11–17. Lamprecht, *What is History?* pp. 3–35. Dodd, in *Popular Science Monthly*, Vol. LXIII, pp. 418–424. Seligman, *Economic Interpretation of History*. Biedermann, *Geschichtsunterricht . . . nach Kulturgeschichtlicher Methode*, pp. 5–45. Bernheim, in *Neue Bahnen*, Vol. X, pp. 285–300.

VIII. Making the Past Real

1. WHERE THE TEXTBOOKS FAIL.

a. Reading matter usually insufficient for clear images of material aspects of the past or for definite impressions of past mental states.

b. Within certain limits definiteness and simplicity secured by brevity of statement.

c. But the principle of making a thing elementary by not saying much about it carried too far.

d. Stories inherently simple often expanded; those inherently difficult often abridged. School history would be more intelligible if the conditions were reversed.

2. SPECIAL AIDS TO VISUALIZATION.

a. Material remains in vicinity of school. Visits to historic places.

b. Casts, models, pictures, visualization charts, maps.

c. The stereoscope, lantern, and other similar apparatus. Moving pictures.

d. Illustrations in textbooks.

e. Historical albums.

3. "LIVING THE PAST."

a. Exaggerated views illustrated by demand that pupil "identify himself completely with the thought, passion and resolution of the time" under consideration.
1. Such a demand scarcely met by the most expert historians.
2. Realism of this type not attainable by children and not even desirable.

b. Some impression of how men thought and felt essential.

c. Special aids.
1. A man's own words expressed in letters, diaries, personal reminiscences, speeches, state papers.
   a. Value varies with character of person and circumstances of utterance.
   b. Words often no clue to real sentiments of author.

2. Characteristic stories and anecdotes.
3. Dramatization of history.
   a. Plays composed by children. May be based on good historical material.
   b. Ready-made plays less effective.
   c. Historical pageants.
   d. Historical drama of the professional stage.
4. Imaginary letters, diaries, speeches, prepared by pupils. Answering the questions: "How should I have felt?" "What should I have said or done?"
5. Historical poems and novels.
   a. Value for history easily exaggerated.
   b. A distinction to be made between those that are contemporary with scenes represented and those that are merely later attempts at reconstruction.
   c. General use in school due in part to tradition which so long made history a mere branch of literature, in part to more general acquaintance with this kind of material than with material more distinctly historical.
6. Material supplied by detailed histories.

References: *Teachers College Record*, November, 1908, pp. 12–25. Wilson, *Mere Literature*, pp. 161–186. Crothers, *Gentle Reader*, pp. 167–200. Stephens, in *California University Chronicle*, Vol. VI, pp. 159–168; *French Revolution*, Vol. II, p. 361. Matthews, in *Forum*, Vol. XXIV, pp. 79–91. Langlois and Seignobos, *Introduction to the Study of History*, pp. 215–225, 301, 319, note. Seignobos, *L'Histoire dans l'Enseignement secondaire*, pp. 15–19.

IX. Time and Place Relations

1. Time Sense in Children.

a. Rudimentary at age of entering school. "Yesterday," "last week," "last month," have a meaning. "One hundred years ago" has not.

b. The sense develops slowly. Even children of twelve or thirteen often measure short periods of time vaguely.

c. From this an argument advanced against dating any events in distant past for children. Can mean only "a long time ago."

d. The difficulty in part removed by objective assistance — chart, rolls, knotted cords, and other devices.

e. Dates properly introduced at least as early as the fifth year.

2. Dates to be remembered.

a. Famous events.

b. Important events.

c. A few in each year fixed as a permanent possession.

d. Evidence at present of recovery from extreme reaction against learning dates.

3. The Place Relation.

a. The way prepared by geography.
b. Maps to be introduced as soon as children have learned to read them.
c. Two kinds of historical geography.
1. Contemporary maps.
2. Modern maps.
d. School history should show how events were influenced by geographic conditions. Natural features of the earth determine in great part:
1. Climate, productions, physical development, employments, habits.
2. Facilities for commerce.
3. Advantages for military and naval defense or aggression.
4. Intellectual tendencies, but to a less extent.
e. Place relation to be fixed under same conditions as time relation.

REFERENCES: Hinsdale, *How to Study and Teach History*, pp. 75–100; 111–126. Vaughan, in *Contemporary Review*, Vol. V, pp. 29–49. Turner, in *Year Book, Herbart Society*, 1899, pp. 7–41. Semple, *American History and its Geographic Conditions*. Brigham, *Geographic Influence in American History Report, New England History Teachers' Association*, 1907.

X. School History and the Historical Method

1. HISTORY FOR SCHOOL PURPOSES USUALLY TREATED AS A BODY OF ASSURED KNOWLEDGE.
a. The problem of elementary instruction held to be interpretation and not criticism.
b. Controversial matters omitted so far as possible.
c. Little to indicate varying degrees of probability in historical facts.
d. Uncertainties covered by dogmatism of textbooks.
2. RAISING THE QUESTION OF HOW WE KNOW.
a. Makes for more intelligent view of history.
b. Often adds to interest in the subject.
c. Affords material for exercise of reasoning power.
d. Directly related to everyday problems.
e. The question usually excluded from elementary history on ground of the difficulties involved.
3. A SIMPLE APPROACH SUGGESTED.
a. When anything has happened we may know about it because:
1. We were present when it happened — direct observation.
2. Some one has told us — oral tradition.
3. We have read about it — written or printed tradition.
4. We have seen a picture of it — pictorial tradition.
b. In how many ways may we know
1. That John was absent from school yesterday?
2. That Lincoln delivered an address at Gettysburg in 1863?
3. That the "Mayflower" crossed the Atlantic in 1620?
c. Which is the best way to know about a thing that has happened? Is

that way always possible? Why? How do we get most of our knowledge of things that have happened?

d. Application to material remains.

In how many ways may we know about

1. The spelling-books of our grandfathers?
2. The bows and arrows used by Indians?
3. The house that George Washington lived in at Mount Vernon?

4. Some Simple Illustrations of Problems connected with Historical Method.

a. The story of how the Egyptians found out that they were not the oldest people in the world. Herodotus, Book II, chapter 2.

1. How did Herodotus know?
2. Is the story true?

b. Petrarch's troubles in getting books copied. Robinson and Rolfe, *Petrarch*, p. 28.

c. The adventures of the manuscript of Bradford's *History of Plymouth Plantation*. Introduction to edition published by the State of Massachusetts.

d. The boundary provisions of a colonial charter. *Teachers College Record*, November, 1908, pp. 40–43.

5. Such Exercises necessarily Limited in Number.

References: *Teachers College Record*, November, 1908, pp. 33–44. *Historical Sources in Schools*, *Report to New England History Teachers' Association*, pp. 1–17. Bourne, *Teaching of History and Civics*, pp. 169–187.

XI. Historical Reading for Children

1. Books designed especially for Children.

a. Principles of grading not well defined.

b. Many books needlessly inaccurate.

c. Literary style often bad.

d. Some unnecessary "writing down" to children.

2. The Use of Standard Histories.

a. Availability of historical works for school purposes not in inverse ratio to size and scientific value.

1. Treatment of special topics often simpler and more concrete than treatment of same topics in textbooks.
2. Many passages in detailed histories and biographies of special interest to children.
   a. Some of these can be read by children.
   b. Some can be read to children.
   c. A factor in cultivating taste for history.
   d. Talks about writers of important works stimulate interest in the works.
3. Real obstacles to more general use.
   a. Cost of standard histories.

b. Lack of acquaintance with such works on the part of elementary teachers.

4. Much good material available in abridgments and volumes of extracts.

3. Teaching Children how to use Books.

a. Indexes and tables of contents.

b. Attention to marginal references and footnotes.

c. Special questions to give facility in finding and using books.

d. The number of books need not be large.

4. Management of Collateral Reading.

a. Class divisions.

b. Special library periods.

c. Books used outside of library periods.

d. Books taken home.

e. References to be exact.

f. References to be posted in library.

g. Pupil's record of readings.

1. Full name of author.
2. Full title of book.
3. Publishers, place, and date of publication.
4. Number of pages read.
5. Personal impression.

References: Andrews, Gambrill and Tall, *Bibliography of History for Schools and Libraries; Report of the Committee of Eight; Teachers College Record*, November, 1908, pp. 45–50. Parsons in *Educational Review*, Vol. XXIII, pp. 400–406. McMurry, *Special Method in History*, pp. 271–291. Rice, *History and Literature*, pp. 167–187. Mace, *Method in History*, pp. 309–311. Gordy and Twitchell, *Pathfinder in American History*, Part I, pp. 101–102; Part II, pp. 235–251. Sullivan, in *Metropolitan Teacher*, November, 1904, pp. 193–198.

INDEX

Accuracy in practice, 46, 98.
Adenoids, signs of, 141.
Adjustment, types of, 32, 33, 34.
Aim in inductive lesson, 55.
Aim of education, 1.
Allen, W. H., quoted, 141.
Application, 63.
Appreciation and emotion, 80.
  In relation to study, 87, 88.
  Lesson for, 78–84.
  Other than that involving the æsthetic emotions, 82, 83, 84.
  Power of, 79.
Assignments, 172.
Association, importance of in recall, 101.
Attention, types of, 35.
  Means of holding, 45.

Bagley, W. C., referred to, 164.
Baldwin, W. A., referred to, 135.

Cautions concerning the inductive lesson, 63, 64, 65.
Class Management, 157.
  As a means, 158.
  As an end, 159.
Comparison and abstraction, 59.
Concrete work, 57.
Constructiveness, 17.
Contagious and infectious diseases, 140.
Contribution by children to discussion, 134.
Coöperation, illustrations of, 132, 133.
  Of parents, 136, 142.
Course of Study, 232.
  Making of, 233.
Creative work, 81.
Criticism of teachers' work, 225.
Criticism, types of, 225, 226.
Cubberley, E. P., referred to, 252.
Curiosity, 20.

Daily program, 161.
Data, collection of by children, 88, 89, 90.
Deductive lesson, 70.
Demonstration, 229.
Dewey, John, quoted, 26.
  Referred to, 65.
Direct instruction in morals, 150.
Discussion by pupils, 131.
Drill lesson, 41.

Earhart, Lida B., referred to, 87.
Eliot, Charles W., referred to, 64.
Elliott, E. C., referred to, 252.
Emulation, 19.
Examination lesson, 101.
Examinations, 228.
  As measure of teachers' work, 104.
  Best type of, 103, 104.
Excursions, 58.
Experience of children, 14.
  Reconstructed, 32.
Experimentation by teachers, 254.
Experts, children as, 64.
Expression slovenly, 111.

Formal discipline, 235.

Generalization, 62.
Group instruction, 162.

Habit formation, 43.
Habits, teaching children how to form, 97.
Heating and ventilating, 140.
Heck, W. H., referred to, 235.
Heredity, 27.
Hygiene and morality, 149.

Ideals, 9.
Illustrative material, 171.
Imitation, 18.
Independent work, 9, 13.
Indirect instruction in morals, 150.
Individual and society, 2.
Individual differences, 239.
Individual instruction, 163.
Individualistic attitude, 111.
Inductive lesson, the, 51.

Industrial arts, 236.
  Opportunity in, for coöperation, 132.
Inference, 75.
Instincts, 15–24.
Institutes, 230.
Intellectual education, 5.
Interest, and effort, 24, 25, 26, 27.
  As an end, 8.
Interpreter, teacher as, 81.

Jackman, W. S., referred to, 137.
James, William, quoted, 6.
Judgments, tentative, 67, 90.

Language, in relation to reasoning, 61–62.
  Vague, 111.
Leisure, training for, 6.
Lesson Plans, 167.
  Deductive lesson in arithmetic, 181.
  Deductive lesson in geography, 197.
  For a drill lesson, 180.
  For appreciation, 202, 212.
  In arithmetic, 177.
  In history, 183.
  In nature study, 195.
  On irrigation, 175.
  Reasons for, 167, 168.
Lighting schoolrooms, 139.

McMurry, C. A. and F. M., referred to, 54.
McMurry, F. M., quoted, 7.
  Referred to, 87, 169.
  And Smith, D. E., referred to, 103.
Measuring results in education, 247.
Memorization, 92, 93.
  By wholes, 93, 94, 95.
Moral-social education, 5.
Moral training, 145.
Motives, 42, 130, 136, 236, 237, 238.

Notes and annotating, 89.

Objective work, 57.
Observations, 58.
Organization of material, 168, 169.
Outline prepared by pupils, 108.
Ownership, 21.

Physical condition and morality, 149.
Physical education, 5.
Physical welfare of children, 139.
Play, 16.
Preparatory step, 51–56.
Presentation, 56.
Principles in deductive lesson, 74.
Problems, 118.
  Children's, 53, 169.
  In deductive lesson, 74.
  In recitation lesson, 108.
Pugnacity, 20.
Punishments, 154.
Pupil participation in school government, 160.
Pyle, W. H., and Snyder, J. C., quoted, 94.

Questioning, 114.
  Direct, 114.
  Alternative, 114.
  Suggestive, 115.
  Large scope, 116.
  Planning, 116.
  Novelty of form, 117.
  Technique of, 119, 120.
  By children, 130, 131.

Questions, pivotal, 170.
  Preparation of, 171.
  Pupils, 120.

Recitation lesson, the, 107.
Reflection, 72, 91.
Repetition, 44.
Responsibility, increased, of school, 146.
Review for perspective, 102.
Review lesson, 101.
Review, purpose of, 101.
Rugh, C. E., quoted, 153.
Russell, Jas. E., referred to, 235.

Scales or units of measurement, 253.
School exhibits, 226.
School, the, its functions, 12.
Scientific work in education, 249.
Scott, C. A., referred to, 137.
Seat work, 164.
Smith, D. E., and McMurry, F. M., referred to, 103.
Snyder, J. C., and Pyle, W. H., quoted, 94.
Social instinct, 22.
Social phases of the recitation, 129.
Standards in education, 105.
Stevenson's *Bed in Summer*, quoted, 94, 95.

Stone, C. W., quoted, 255.
Referred to, 105.
Study lesson, the, 86–99.
Study, methods of, in relation to methods of teaching, 86–91.
Summaries, in plans, 171.
Supervision, the teacher in relation to, 224.
Supplementing the textbook, 110.
Suzzallo, Henry, referred to, 61.

Teacher, influence of, 154.
Teachers' meetings, 229.
Technique involved in creation related to appreciation, 79.
Textbooks, use of, 108–109.
Thinking in relation to memorization, 94.
Thorndike, E. L., referred to, 27, 28, 105, 235, 252.
Titchener, referred to, 35.
Topical outlines, 102.
Topical recitation, 107.
Types, teaching by, 66.

Verification, 75, 97.
The habit of, 92.
Visiting, school, 227.
Vocational education, 5.

Wonder, 23.

THE following pages contain advertisements of Macmillan books on education, pedagogy, etc.

A Cyclopedia of Education

EDITED BY PAUL MONROE, PH.D.

Professor of the History of Education, Teachers College, Columbia University; Author of "A Text-Book in the History of Education," "Brief Course in the History of Education," etc.

The need of such work is evidenced: By the great mass of varied educational literature showing an equal range in educational practice and theory; by the growing importance of the school as a social institution, and the fuller recognition of education as a social process; and by the great increase in the number of teachers and the instability of tenure which at the same time marks the profession.

The men who need it are: All teachers, professional men, editors, ministers, legislators, all public men who deal with large questions of public welfare intimately connected with education — every one who appreciates the value of a reference work which will give him the outlines of any educational problem, the suggested solutions, the statistical information, and in general the essential facts necessary to its comprehension.

Among the departmental Editors associated with Dr. Monroe are Dr. ELMER E. BROWN, U. S. Commissioner of Education, Prof. E. F. BUCHNER, of Johns Hopkins, Dr. WM. H. BURNHAM, Clark University, M. GABRIEL COMPAYRÉ, Inspector-General of Public Instruction, Paris, France, Prof. WILHELM MÜNCH, of Berlin University, Germany, Prof. JOHN DEWEY, of Columbia University, Dr. ELLWOOD P. CUBBERLY, Stanford University, Cal., Prof. FOSTER WATSON, of the University College of Wales, Dr. DAVID SNEDDEN, Commissioner of Education for the State of Massachusetts, and others.

Send for a descriptive circular and list of contributors to Volume I

To be completed in five large octavo volumes, each $5.00 net

THE MACMILLAN COMPANY

64–66 Fifth Avenue, New York

A LIST OF BOOKS FOR TEACHERS

Published by The Macmillan Company

ADAMS, JOHN. **Exposition and Illustration in Teaching.**
Cloth. viii + 428 pages. $1.25 net.

ARMSTRONG, HENRY E. **The Teaching of Scientific Method and Other Papers on Education.** *Cloth. xxvii + 504 pages. $1.75 net.*

ARNOLD, FELIX. **A Text-book of School and Class Management. I. Theory and Practice.** *Cloth. 12mo. xxii + 409 pages. Index. $1.25 net.*

II. Administration and Hygiene. *Cloth. xii + 292 pages. $1.00 net*

—— **Attention and Interest.** *Cloth. viii + 272 pages. $1.00 net.*

BAGLEY, WILLIAM CHANDLER. **Classroom Management: Its Principles and Technique.** By William Chandler Bagley, Director, School of Education, University of Illinois.
Cloth. 12mo. xvii + 352 pages. $1.25 net.

—— **The Educative Process.** *Cloth. 12mo. xix + 358 pages. $1.25 net.*

BROWN, JOHN FRANKLIN. **The American High School.** By John Franklin Brown, Ph.D., formerly Professor in Education and Inspector of High Schools for the State University of Iowa. *Cloth. xii + 498 pages. 12mo. $1.25 net.*

BUTLER, NICHOLAS MURRAY. **The Meaning of Education, and Other Essays and Addresses.** By Nicholas Murray Butler, President of Columbia University.
Cloth. 12mo. xii + 230 pages. $1.00 net.

CHUBB, PERCIVAL. **The Teaching of English.** By Percival Chubb, Principal of High School Department, Ethical Culture School, New York.
Cloth. 12mo. xvii + 411 pages. $1.00 net.

COLLAR, GEORGE, AND CROOK, CHARLES W. **School Management and Methods of Instruction.** By George Collar and Charles W. Crook, London.
Cloth. 12mo. viii + 336 pages. $1.00 net.

CRONSON, BERNARD. **Methods in Elementary School Studies.** By Bernard Cronson, A.B., Ph.D., Principal of Public School No. 3, Borough of Manhattan, City of New York. *Cloth. 12mo. 167 pages. $1.25 net.*

—— **Pupil Self-Government.** *Cloth. 12mo. ix + 107 pages. $.90 net.*

CUBBERLEY. **Syllabus of Lectures on the History of Education.** With Selected Bibliographies and Suggested Readings. By Ellwood P. Cubberley. Second Edition, revised and enlarged. In two parts.
Part I, v + 129 pages, $1.50 net; Part II, xv + 361 pages, $1.50 net.
Complete in one volume, $2.60 net.

DE GARMO, CHARLES. **Interest and Education.** By Charles De Garmo, Professor of the Science and Art of Education in Cornell University.
Cloth. 12mo. xvii + 230 pages. $1.00 net.

—— **The Principles of Secondary Education.**
Vol. I, Studies. Cloth. 12mo. xii + 209 pages. $1.25 net.
Vol. II, Processes of Instruction. xii + 200 pages. $1.00 net.
Vol. III, Ethical Training. x + 220 pages. $1.00 net.

DEXTER, EDWIN GRANT. **A History of Education in the United States. By Edwin Grant Dexter, Professor of Education in the University of Illinois.**
Cloth. xxi + 665 pages. 8vo. $2.00 net.

MONROE, Paul. A Text-book in the History of Education.
Cloth. xxiii + 277 pages. 12mo. $1.90 net.

—— A Source Book of the History of Education. For the Greek and Roman Period.
Cloth. xiii + 515 pages. 8vo. $2.25 net.

O'SHEA, M. V. Dynamic Factors in Education. By M. V. O'Shea, Professor of the Science and Art of Education, University of Wisconsin.
Cloth. 12mo. xiii + 320 pages. $1.25 net

——Linguistic Development and Education.
Cloth. 12mo. xvii + 347 pages. $1.25 net.

PARK, Joseph C. Educational Woodworking for Home and School. By Joseph C. Park, State Normal and Training School, Oswego, N.Y.
Cloth. 12mo. xiii + 210 pages, illus. $1.00 net.

PERRY, Arthur C. The Management of a City School. By Arthur C. Perry, Jr., Ph.D., Principal of Public School, No. 85, Brooklyn, N.Y.
Cloth. 12mo. viii + 350 pages. $1.25 net.

ROWE, Stuart H. The Physical Nature of the Child. By Dr. Stuart H. Rowe, Professor of Psychology and the History of Education, Training School for Teachers, Brooklyn, N.Y. *Cloth. 12mo. vi + 211 pages. $.90 net.*

ROYCE, Josiah. Outlines of Psychology. An Elementary Treatise with Some Practical Applications. By Josiah Royce, Professor of the History of Philosophy in Harvard University. *Cloth. 12mo. xxvii + 392 pages. $1.90 net.*

SHAW, Edward R. School Hygiene. By the late Edward R. Shaw.
Cloth. vii + 255 pages. 12mo. $1.00 net.

SHURTER, Edwin DuBois. The Rhetoric of Oratory. By the Associate Professor of Public Speaking in the University of Texas.
Cloth. 323 pages. 12mo. $1.10 net.

SINCLAIR, S. B. and Tracy F. Introductory Educational Psychology. A Book for Teachers in Training. *Cloth. 180 pages. $ .90 net.*

SMITH, David E. The Teaching of Elementary Mathematics. By David E. Smith, Professor of Mathematics, Teachers College, Columbia University.
Cloth. xv + 312 pages. 12mo. $1.00 net.

SNEDDEN and ALLEN. School Reports and School Efficiency. By David S. Snedden, Ph D., and William H. Allen, Ph.D. For the New York Committee on Physical Welfare of School Children. *Cloth. 12mo. xi + 183 pages. $1.50 net.*

VANDEWALKER, Nina C. The Kindergarten in American Education. By Nina C. Vandewalker, Director of Kindergarten Training Department, Milwaukee State Normal School. *Cloth. xiii + 274 pages. Portr., index, 12mo. $1.25 net.*

WARNER, Francis. The Study of Children and Their School Training. By Francis Warner. *Cloth. xix + 264 pages. 12mo. $1.00 net.*

WINTERBURN and BARR. Methods in Teaching. Being the Stockton Methods in Elementary Schools. By Mrs. Rosa V. Winterburn, of Los Angeles, and James A. Barr, Superintendent of Schools at Stockton, Cal.
Cloth. xii + 355 pages. 12mo. $1.25 net.

THE MACMILLAN COMPANY
Publishers 64-66 Fifth Avenue New York

DUTTON, SAMUEL T. **Social Phases of Education in the School and the Home.** By Samuel T. Dutton, Superintendent of the Horace Mann Schools, New York.
Cloth. 12mo. ix + 259 pages. $1.25 net.

DUTTON & SNEDDEN. **The Administration of Public Education in the United States.** By Samuel Train Dutton, A.M., and David Snedden, Ph.D. With an Introduction by Nicholas Murray Butler, Ph.D., LL.D.
Cloth. viii + 595 pages. Bibliography. Index. 12mo. $1.75 net.

FITCH, SIR JOSHUA. **Educational Aims and Methods.** Lectures and Addresses by Sir Joshua Fitch, late Her Majesty's Inspector of Training Colleges.
Cloth. xii + 448 pages. 12mo. $1.25 net.

—— **Lectures on Teaching.** *Cloth. xiii + 303 pages. 16mo. $1.00 net.*

FOGHT, HAROLD W. **The American Rural School.** By H. W. Foght, Professor of Education, Midland College. *Cloth. xxii + 366 pages. $1.25 net.*

GANONG, WILLIAM F. **The Teaching Botanist.** By William F. Ganong, Ph.D., Smith College. *Cloth. 12mo. Rewritten ed. xii + 444 pages. $1.25 net.*

GILMAN, MARY L. **Seat Work and Industrial Occupations.** A Practical Course for Primary Grades. By Mary L. Gilman, Principal of the Clay School, Minneapolis, Minn., and Elizabeth L. Williams, Principal of the Holmes School, Minneapolis, Minn. *Fully illustrated. Cloth. 141 pages. Square 12mo. $.50 net.*

GRAVES, FRANK P. **A History of Education before the Middle Ages.** By Frank Pierrepont Graves, Ohio State University.
Cloth. 320 pages. Bibliography. $1.10 net.

—— **A History of Education during the Middle Ages.** *Cloth, 376 pages, $1.10 net.*

HALLECK, REUBEN POST. **The Education of the Central Nervous System.** A Study of Foundations, especially of Sensory and Motor Training.
Cloth. 12mo. xii + 258 pages. $1.00 net.

HANUS, PAUL H. **A Modern School.** By Paul H. Hanus, Professor of the History and Art of Teaching in Harvard University.
Cloth. 12mo. x + 306 pages. $1.25 net.

—— **Educational Aims and Educational Values.** By Paul H. Hanus.
Cloth. 12mo. vii + 221 pages. $1.00 net.

HENDERSON, ERNEST N. **The Principles of Education.** By Ernest Norton Henderson, Professor of Education and Philosophy in Adelphi College, Brooklyn.
Cloth. 8vo. xiv + 570 pages. $1.75 net.

HERBART, JOHN FREDERICK. **Outlines of Educational Doctrine.** By John Frederick Herbart. Translated by Alex. F. Lange, Associate Professor of English and Scandinavian Philology and Dean of the Faculty of the College of Letters, University of California. Annoted by Charles De Garmo, Professor of the Science and Art of Education, Cornell University. *Cloth. Large 12mo. xi + 334 pages. $1.25 net.*

HERRICK, CHEESMAN A. **The Meaning and Practice of Commercial Education.** By Cheesman A. Herrick, Ph.D., Director of School of Commerce, Philadelphia Central High School. *Cloth. xv + 378 pages. 12mo. $1.25 net.*

HORNE, HERMAN HARRELL. **The Philosophy of Education.** By Herman Harrell Horne, Assistant Professor of Philosophy and Pedagogy in Dartmouth College.
Cloth. 8vo. xvii + 395 pages. $1.50 net.

—— **The Psychological Principles of Education.** *12mo. xiii + 435 pages. $1.75 net.*

—— **Idealism in Education.** *Cloth. 12mo. xxi + 183 pages. $1.25 net.*

HUEY, EDMUND B. **The Psychology and Pedagogy of Reading.** By Professor Edmund B. Huey, of the Western University of Pennsylvania.
Cloth. 12mo. xvi + 469 pages. $1.40 net.

JONES, OLIVE M., LEARY, ELEANOR G., and QUISH, AGNES E. **Teaching Children to Study.** The Group System applied.
Illustrated. Cloth. viii + 193 pages. 12mo. $.80 net.

KILPATRICK, VAN EVRIE. **Departmental Teaching in Elementary Schools.**
Cloth. 12mo. xiii + 130 pages. 16mo. $.60 net.

KIRKPATRICK, EDWIN A. **Fundamentals of Child Study.** By Professor Edwin A. Kirkpatrick, Principal of State Normal School, Fitchburg, Mass.
Cloth. 12mo. xxi + 384 pages. $1.25 net.

—— **Genetic Psychology.** *Cloth. xv + 373 pages. $1.25 net.*

LAURIE, S. S. **Institutes of Education.**
3d ed. Cloth. xii + 391 pages. $1.90 net.

MAJOR, DAVID R. **First Steps in Mental Growth.** A Series of Studies in the Psychology of Infancy. By David R. Major, Professor of Education in the Ohio State University. *Cloth. xiv + 360 pages. 12mo. $1.25 net.*

THE McMURRY SERIES *Each, cloth, 12mo.*

General Method

—— **The Elements of General Method.** By Charles A. McMurry.
323 pages. $.90 net.

—— **The Method of the Recitation.** By Charles A. McMurry and Frank M. McMurry, Professor of the Theory and Practice of Teaching, Teachers College, Columbia University. *xi + 329 pages. $.90 net.*

Special Method. By Charles A. McMurry.

—— **Special Method in Primary Reading and Oral Work with Stories.**
vii + 103 pages. $.60 net.

—— **Special Method in the Reading of English Classics.** *vi + 254 pages. $.75 net.*

—— **Special Method in Language in the Eight Grades.** *viii + 192 pages. $.70 net.*

—— **Special Method in History.** *vii + 291 pages. $.75 net.*

—— **Special Method in Arithmetic.** *vii + 225 pages. $.70 net.*

—— **Special Method in Geography.** *xi + 217 pages. $.70 net.*

—— **Special Method in Elementary Science.** *ix + 275 pages. $.75 net*

—— **Nature Study Lessons for Primary Grades.** By Mrs. Lida B. McMurry, with an Introduction by Charles A. McMurry. *xi + 191 pages. $.60 net.*

Course of Study in the Eight Grades.

Vol. I. Grades I to IV. vii + 236 pages. $.75 net.
Vol. II. Grades V to VIII. v + 226 pages. $.75 net.

MONROE, PAUL. **A Brief Course in the History of Education.** By Paul Monroe, Ph.D., Professor in the History of Education, Teachers College, Columbia University. *Cloth. 8vo. xviii + 409 pages. $1.25 net*

The Philosophy of Education

By HERMAN HARRELL HORNE, Ph.D.

Professor of the History of Philosophy and of the History of Education, New York University

Cloth, 8vo, xvii + 295 pages, $1.50 net

A connected series of discussions on the foundations of education in the related sciences of biology, physiology, sociology, and philosophy, and a thoroughgoing interpretation of the nature, place, and meaning of education in our world. The newest points of view in the realms of natural and mental science are applied to the understanding of educational problems. The field of education is carefully divided, and the total discussion is devoted to the philosophy of education, in distinction from its history, science, and art.

The Psychological Principles of Education

By HERMAN HARRELL HORNE, Ph.D.

Cloth, 12mo, xiii + 435 pages, $1.75 net

The relationship of this book to the author's "Philosophy of Education" is that, whereas the first was mostly theory with some practice, this is mostly practice with some theory. This volume lays the scientific foundations for the art of teaching so far as those foundations are concerned with psychology. The author is the "middleman" between the psychologist and the teacher, taking the theoretical descriptions of pure psychology and transforming them into educational principles for the teacher. In the Introduction the reader gets his bearings in the field of the science of education. The remainder of the book sketches this science from the standpoint of psychology, the four parts of the work, Intellectual Education, Emotional Education, Moral Education, and Religious Education, being suggested by the nature of man, the subject of education. A special feature is the attention paid to the education of the emotions and of the will.

Idealism in Education

Or First Principles in the Making of Men and Women

By HERMAN HARRELL HORNE, Ph.D.

Author of "The Philosophy of Education" and "The Psychological Principles of Education"

Cloth, 12mo, xxi + 183 pages, index, $1.25 net; by mail, $1.34

Professor Horne here discusses three things which he regards as fundamental in the building of human character, — Heredity, Environment, and Will. His method of handling these otherwise heavy subjects, makes the book of interest, even to the general reader.

THE MACMILLAN COMPANY

64-66 Fifth Avenue, New York

By WILLIAM CHANDLER BAGLEY

Director of the School of Education, University of Illinois

Craftsmanship in Teaching

Cloth. 12mo. 247 pages. $1.25 net.

Readers of "The Educative Process" and "Classroom Management" by Director W. C. Bagley of the University of Illinois will welcome the author's new book on "Craftsmanship in Teaching." The book is made up of a series of addresses given before educational gatherings, the subject of the first one giving the book its name. In these addresses the personality of the author is more in evidence than is possible in his more systematic work, but the same sane, scientific point of view is apparent throughout.

Classroom Management

Cloth. xvii + 332 pages. $1.25 net.

This book considers the problems that are consequent upon the massing of children together for purposes of instruction and training. It aims to discover how the unit-group of the school system — the "class" — can be most effectively handled. The topics commonly included in treatises upon school management receive adequate attention: the first day of school; the mechanizing of routine; the daily programme; discipline and punishment; absence and tardiness, etc.

The Educative Process

Cloth. xix + 358 pages. $1.25 net.

The book aims to prevent a waste of energy on the part of the young teacher by setting forth a systematic and comprehensive view of the task that is to be accomplished by the school, with the working principles for the attainment of the end. The best idea for the author's plan of treatment can be had from his division of the book. Part I discusses the function of education and of the school in biological and sociological terms. Part II continues the same topic from the psychological standpoint. Part III deals with the functioning of experience in its relation to the educative process. Part IV treats of the relation of education to the three periods of child-development: the transitional, the formative, the adolescent. Part V considers educational values and the necessity of ideals in the educative process, and Part VI concludes with the technique of teaching.

THE MACMILLAN COMPANY

Publishers **64–66 Fifth Avenue** **New York**

515-BAA-563